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MARCH, 1947

THE Refrigeration INDUSTRY

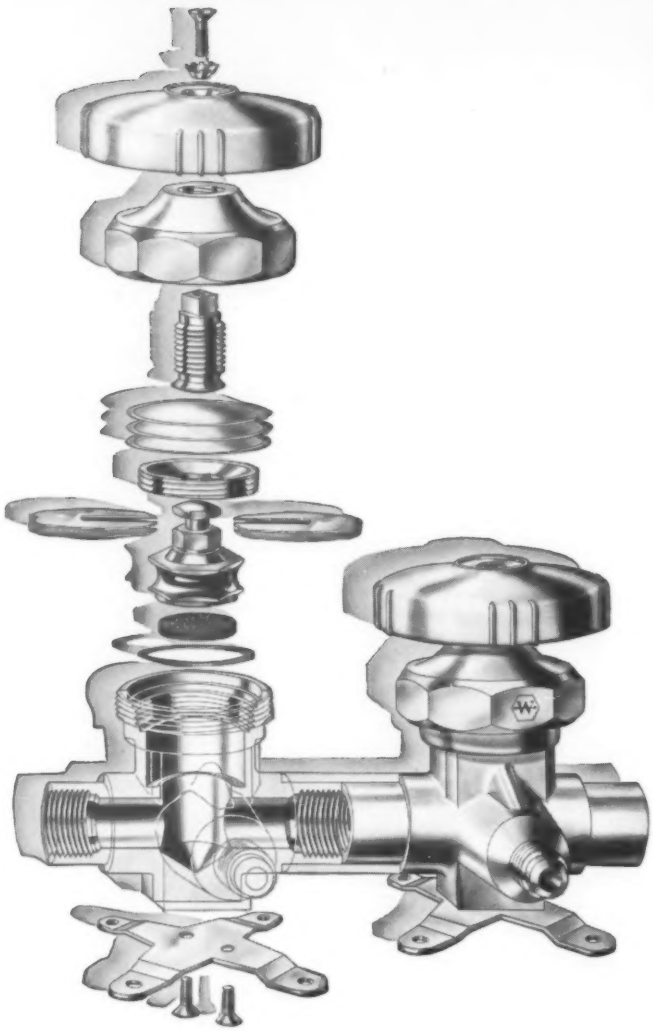
AIR CONDITIONING EQUIPMENT

MERCHANDISING ★ INSTALLATION ★ MAINTENANCE

IN THIS ISSUE:

Spring Sales and Service Promotions Via Direct-Mail
What's New In Air Conditioning . . . Comfort Cooling
Service On Wheels . . . . Where the Cash Comes In

An easy way to make Manifold Assemblies



YOU can make a Weatherhead Manifold Assembly with any desired number of outlets to meet your individual requirements by using combinations of two and three valve manifolds joined by close threaded brass nipples.

Weatherhead solder type Three-Way Simplicity Packless Valves are ideal for this purpose. When combined in manifold assemblies, these fine, precision made valves provide, as nearly as possible, one piece construction. The joint where the valve is usually soldered into the manifold tube is eliminated and a more compact manifold is obtained with lower overall height.

Write for your copy of the new refrigeration catalog. It describes and illustrates the Weatherhead line of valves, dehydrators, strainers, manifold assemblies, accessories, fittings.

Look Ahead with

Weatherhead

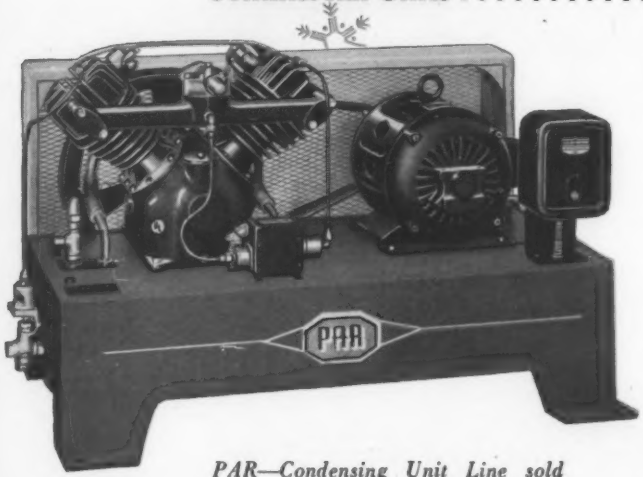
ATTENTION REFRIGERATION ENGINEERS!

We manufacture valves, dehydrators, strainers, manifold assemblies, accessories and fittings—an extensive line of original equipment for the refrigeration industry.

PAR REFRIGERATION UNITS

from
1/6 H. P.
Close-Coupled
Units

to
5 H. P.
Heavy Duty
Commercial Units . . . . . provide a wide variety of models and sizes for "tailored" installations. With Par there's a proper size to fit every application . . . giving balanced performance for economy and efficiency. And Par's many outstanding features of construction assure dependable, trouble-free service. Know more about Par—see your Par wholesaler or write for illustrated catalog R-98.



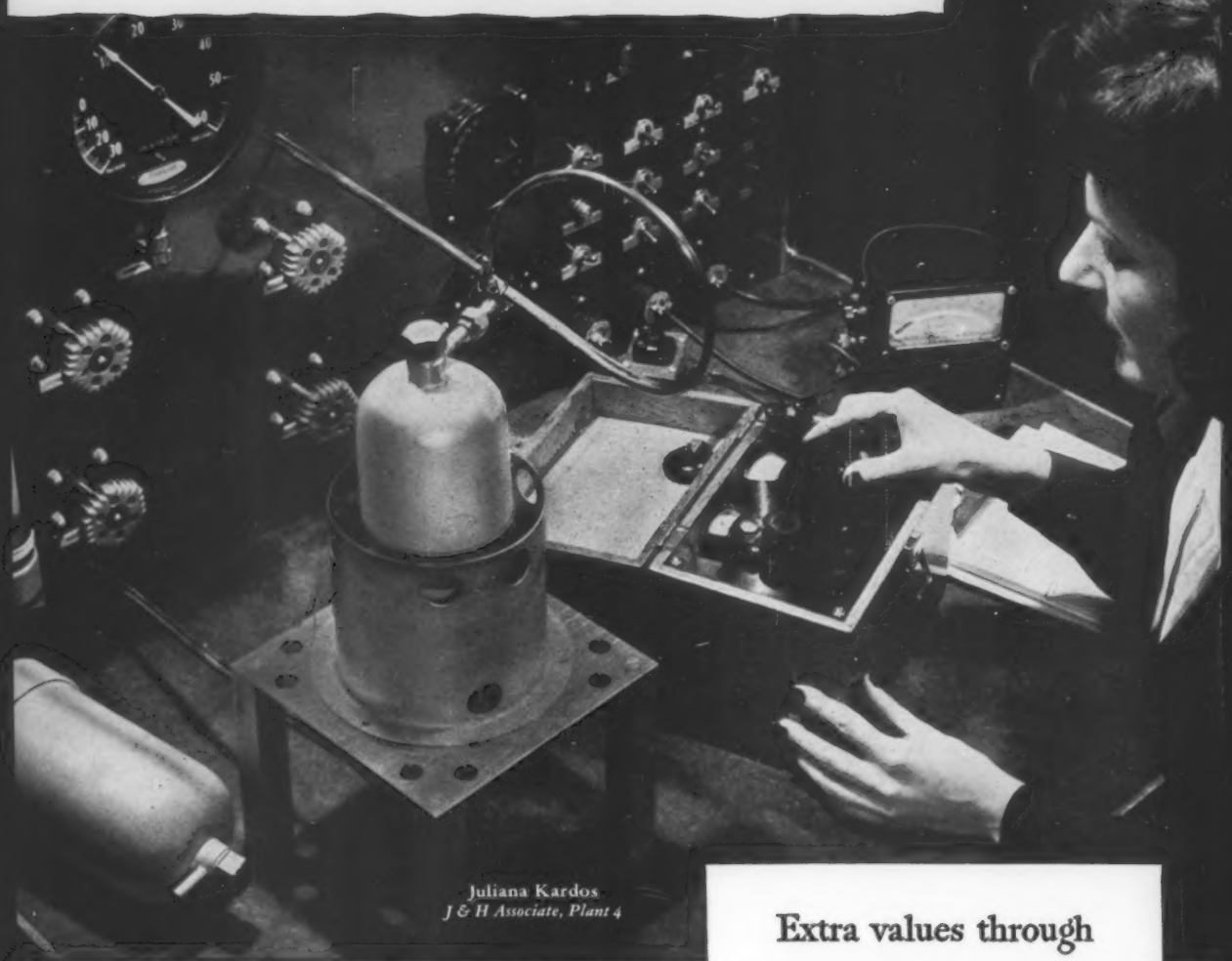
PAR—Condensing Unit Line sold exclusively through Franchised Refrigeration Equipment Wholesalers!

. . . By Comparison — You'll Buy PAR

Lynch Manufacturing Corporation

General Offices, Toledo 1 • Factory, Defiance, Ohio, U.S.A.

Ice plant in a bottle



Juliana Kardos
J & H Associate, Plant 4

Extra values through

JACK & HEINTZ

Mass Precision

Jack & Heintz engineers thought there must be a better way to build a refrigeration compressor. So they *turned the motor inside out*... made the rotor revolve *outside* the stator instead of inside.

Result: A revolutionary new hermetic compressor shown above on test. It is no larger than a milk bottle... requires a third the space and weighs half as much as other compressors of equal capacity.

This is typical of the achievements through Jack & Heintz *mass precision* methods which are improving electric motors, refrigeration compressors, bearings and Eisemann magnetos.

JACK & HEINTZ PRECISION INDUSTRIES, INC., *Cleveland 1, Ohio*

THE Refrigeration INDUSTRY

VOLUME 4, NO. 3

THIS MAGAZINE has no official affiliation with ANY group, society or association.

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ECA

THE COVER . . . Symbolic of the type of skilled engineers being prepared to apply and install the vast wealth of air conditioning equipment which the industry confidently expects to produce and sell within the next few years are these college engineering graduates shown receiving instruction in the first postwar student class conducted by The Trane Co. After studying for six months under the watchful eye of factory experts, these young men round out their training with a minimum of six months' experience in the field.

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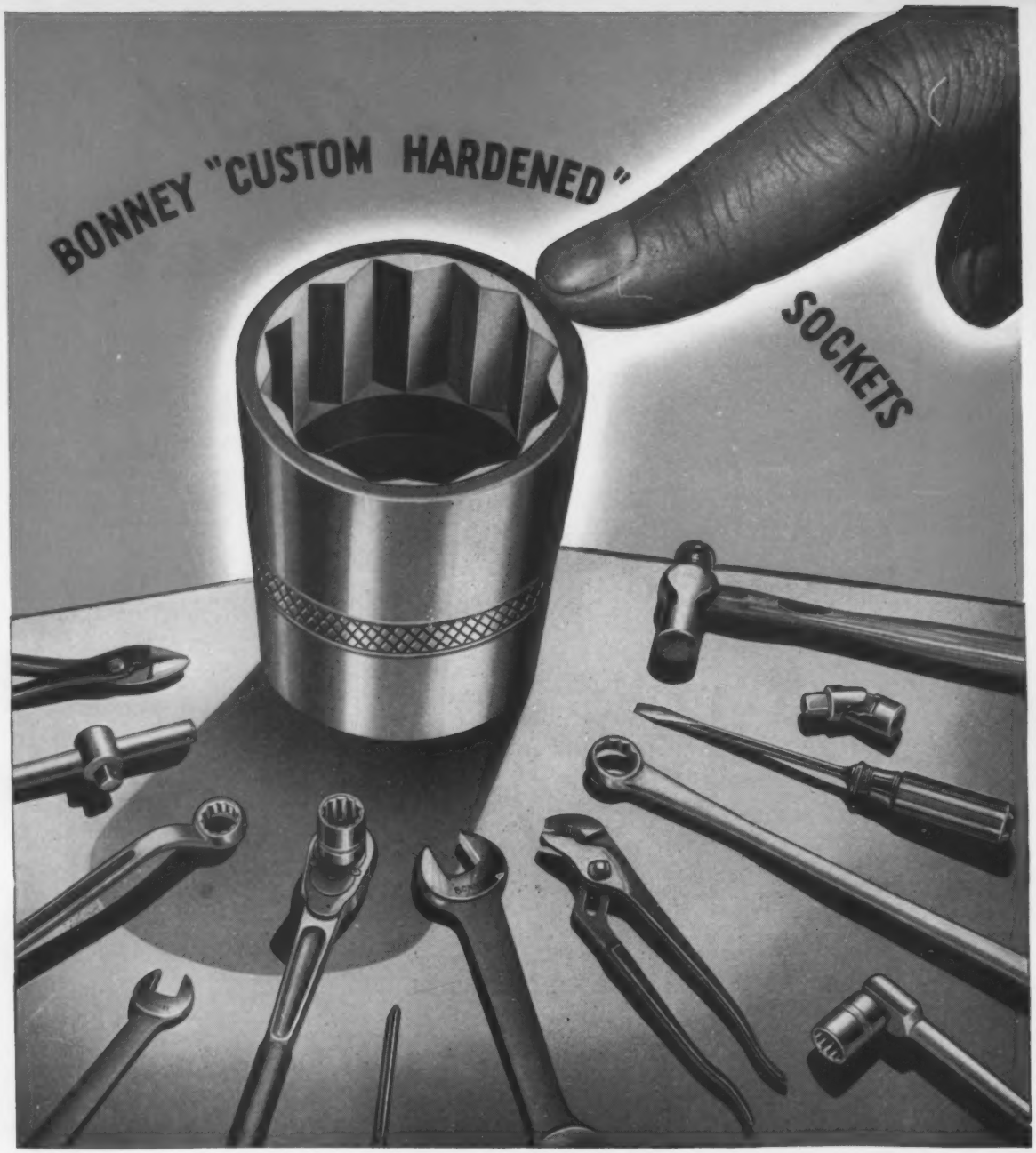


- Bonney sockets like all Bonney tools, are dependably hard and tough—they won't spread or crack or wear unevenly because they're "custom hardened."

  Each heat of steel that goes into Bonney tools is analyzed and a heat treatment prescribed to insure proper hardness and toughness of the finished tool.

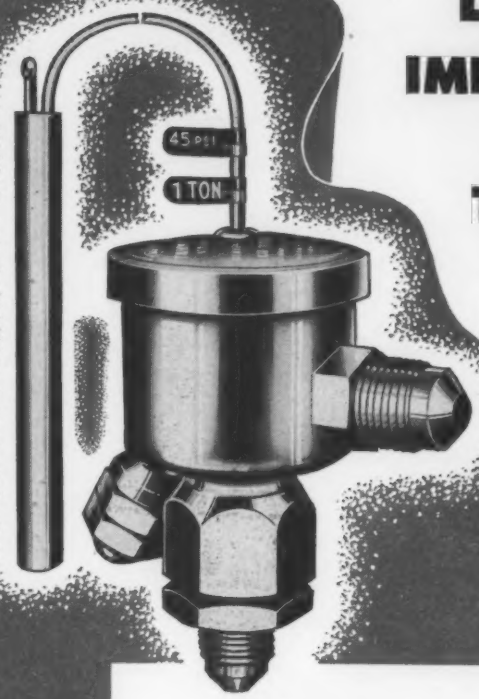
  Ask your distributor or jobber about Bonney tools.

BONNEY TOOLS

BONNEY FORGE & TOOL WORKS • 719 N. MEADOW ST. • ALLENTOWN, PA.

In Canada: Gray-Bonney Tool Company, Ltd., St. Clarens & Royce Aves., Toronto

ALCO THERMO-LIMIT VALVE



LAST YEAR'S IMPROVEMENT

*

THIS YEAR'S STANDARD

The THERMO-LIMIT has now proved its worth in tens of thousands of refrigeration systems. It combines all the advantages of liquid- and gas-charged valves:

- PRESSURE LIMITING. Prevents motor overload.
- INTERCHANGEABLE PRESSURE LIMIT. Various pressure "cartridges" can be easily replaced in the field.
- LIQUID-CHARGED. Positive control—can be installed in ANY location or position.
- INTERCHANGEABLE CAPACITY. Various cage assemblies can be easily exchanged in the field.
- EXTERNAL ADJUSTMENT. Change of super-heat does not affect pressure limiting point.

Available at Alco wholesalers everywhere. Write for our Bulletin 152.

ALCO

Designers and Manufacturers of Thermostatic Expansion Valves; Pressure Regulating Valves; Solenoid Valves; Float Valves; Float Switches.

ALCO VALVE CO.

843 KINGSLAND AVE. • ST. LOUIS 5, MO.

IT'S HERE! A SUPER-

NEW FRIGID-FREEZE

3 DIMENSIONAL DISPLAYS

Your products have depth, realism, *full-vision* sales appeal!

Brand-name and package get "can't-miss-it" display.

Brilliantly lighted, full color, life-like products—*interchangeable!*

Prices and products available go here—easy to read, easy to replace.

A Completely New Approach

TO FROZEN FOOD MERCHANDISING

Here at last is selling force that frozen food merchandising has always lacked—eye-appeal. The brilliant, colorful new Frigid-Freeze display superstructure is a real "stopper" for shoppers.

Bring frozen food to life—show them in appealing, sales-provoking form. Not just pictures, but *three dimensional* displays that catch the eye...and produce extra sales! It's merchandising magic, with colorful transparencies ingeniously arranged to show *depth* and lighted from behind. Customers stop to look . . . and *stay to buy!*

There's provision for replaceable price cards, of course, psychologically positioned to cinch the sales that have been set up by the displays—and brand name and package are shown more powerfully than has ever before been possible! Any way you look at it, this Frigid-Freeze cabinet has everything it takes to put frozen foods on the highway to the highest volume of sales ever!

ONLY FRIGID-FREEZE HAS THIS EXCLUSIVE, NEW FEATURE!

SALESMAN FOR FROZEN FOODS!

Sliding glass doors easily removable for self-service maximum sales — quickly replaceable.

PUT APPETITE APPEAL TO WORK!

Illustrated, Frigid-Freeze Cabinet No. G-1046 equipped with 99-3 superstructure

Now, for the first time, a dynamic means of making frozen foods *sell themselves!* Who can resist the sight of berries fresh from the vine, field-fresh vegetables, perfectly cooked meats? *That's* the way to sell frozen foods! That's what the new Frigid-Freeze cabinets with three-dimensional display superstructures offer! THEY'RE READY, NOW! No need to wait—the new "3-dimensional" Frigid-Freeze cabinets are *in production,* and you can start stepping up your frozen foods volume almost immediately! Models, too, for ice cream . . . to bring its appeal out of hiding and before consumer's eyes, to sell ice cream in brick, bulk, sundae and soda. And, of course, it has the quality, efficiency and reliability for which Frigid-Freeze equipment has always been known. See your Refrigeration Corporation of America representative or write for details now—it means profits to you!

THERE'S A FRIGID-FREEZE CABINET FOR EVERY LOW TEMPERATURE REQUIREMENT

Send for big, colorful, eight-page booklet showing entire FRIGID-FREEZE line of new home and commercial freezers — filled with details, specifications, illustrations. Fill in the coupon below, now!

REFRIGERATION CORPORATION OF AMERICA
55 West 13th St., New York 11, N. Y. Dep't RI-3
Gentlemen: Please send me your 8-page catalog of Frigid-Freeze products.

*Name*_____

*Firm Name*_____

*Address*_____

*City*_____ *State*_____

Frozen Food Industry EXPOSITION Civic Auditorium San Francisco March 19 - 21, 1947
BOOTHS 215-216

Pioneers IN LOW TEMPERATURE · DESIGNING · ENGINEERING · MANUFACTURING · CONSTRUCTION

REFRIGERATION CORPORATION of AMERICA

Frigid Freeze

EXECUTIVE SALES OFFICES: 55 WEST 13th STREET, NEW YORK 11, N. Y.
FACTORIES: PERTH AMBOY, NEW JERSEY

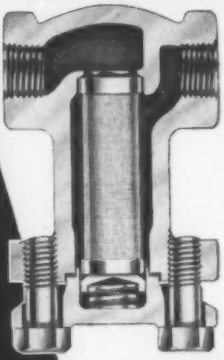
A DIVISION OF NOMA ELECTRIC CORP.

For Ammonia

IMMEDIATE DELIVERY ON MANY ITEMS

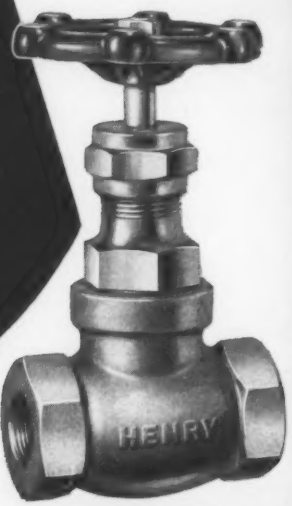
HENRY VALVE CO. CONTROLLING FLOW SINCE 1914

For more than a quarter century, the continued preference shown in the refrigeration and industrial fields for premium-grade Henry Valves, Fittings, and Accessories can be traced to the exclusive patented features of design and construction found in many of the Henry Products.

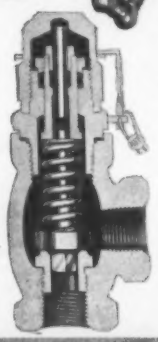


SCALE TRAP OR STRAINER
Large capacity with a spring tensioned self-centering and removable screen. Choice of 50 or 100 mesh. Sizes ¼" to 2" inclusive.

GAUGE GLASS ASSEMBLY
For compressor crank cases and liquid storage tanks. Slotted gauge glass guards. Ball check valve in inlets automatically shuts off flow if the glass should break.



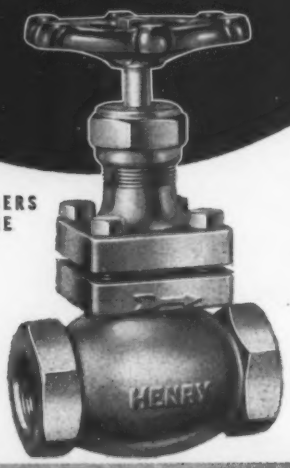
Screwed Bonnet Type Valve



PRESSURE RELIEF VALVE
Accurate release and positive reseating action. Soft alloy metal seat and extended stem permit emergency reseating without removing valve from line. Sizes ⅜" to 2" inclusive.

SOLD BY JOBBERS EVERYWHERE

Cable:
HEVALCO, CHICAGO



Bolted Bonnet Type Valve

LINE SHUT-OFF VALVES
They are more compact because the bodies are made from die cast permanent mold iron of close grain structure. Two piece stem construction. Floating disc has soft metal alloy insert which rotates on stem. Sizes 1¼" to 2" inclusive.

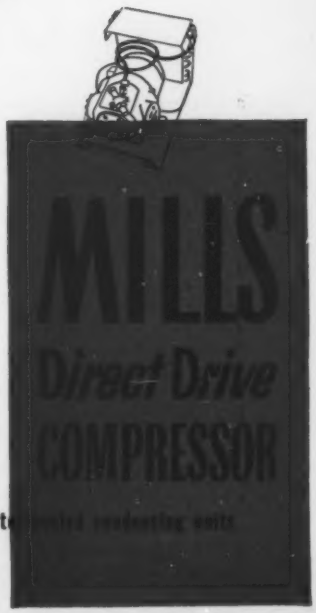
HENRY VALVE COMPANY
3260 WEST GRAND AVE.
CHICAGO 51, ILLINOIS

Control Device, Valves, Driers, Strainers and Accessories for Refrigeration and Air Conditioning and Industrial Applications

"...plus more storage capacity."

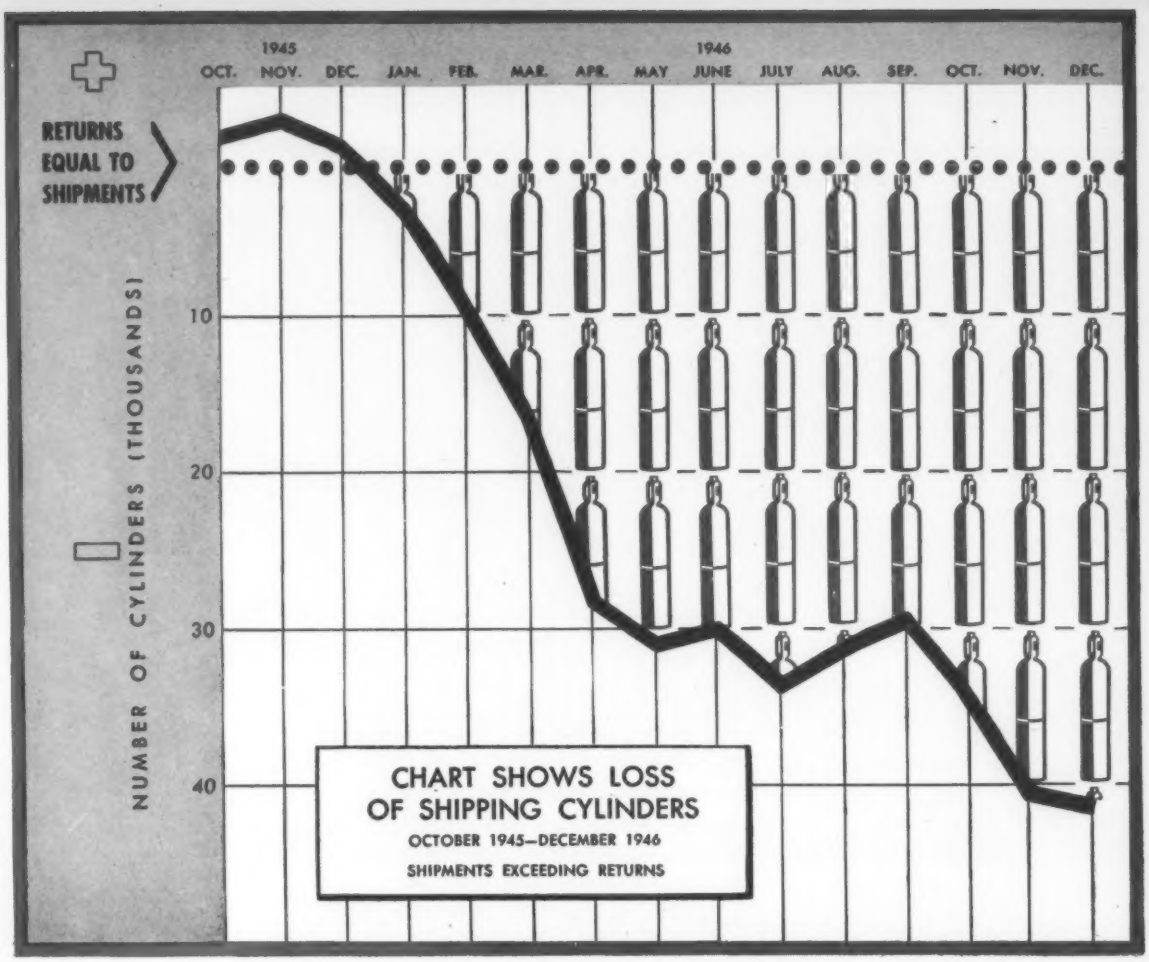
In addition to the weight-reducing factors inherent in the smaller size of the Mills Direct Drive Compressor, it makes available more useable space within cabinets and other types of self-contained refrigeration units. Without increasing cabinet size, storage capacity can be enlarged because the Direct Drive is smaller proportionately than conventional open-type units.

It retains, however, the easy accessibility of belt-driven models to make "on location" service simple and practical. Add to these distinct advantages the quality symbolic of Mills craftsmanship, and you will see why it will be worth your while to learn more about Direct Drive.



First post-war addition to a distinguished family of air- and wat

MILLS INDUSTRIES, INCORPORATED · 4100 FULLERTON AVENUE · CHICAGO 39, ILLINOIS



YOUR SUPPLY OF "FREON" REFRIGERANTS THREATENED BY CYLINDER SHORTAGE!

The chart above carries a warning. It proves non-return of empty cylinders seriously endangers delivery of "Freon" refrigerants.

Dotted horizontal line at the top of the graph indicates normal return of cylinders to the "Freon" plants. The downward line shows that throughout 1946 (with exception of June, August and September) far more cylinders were shipped than were returned. The accumulative loss now totals more than 40,000 cylinders!

These cylinders are urgently needed. To continue supplying "Freon" and to meet spring and summer demands, *every empty cylinder must be used*. Enough new cylinders aren't available. Returns *must* do the job.

Today—please check *all* cylinders you have. Return the empties at once. Your cooperation will help ease the situation . . . aid in making it possible to ship "Freon" promptly. Kinetic Chemicals, Inc., Tenth and Market Sts., Wilmington 98, Del.

RETURN EMPTY "FREON" CYLINDERS NOW!

Ship empties via freight collect to:

Kinetic Chemicals, Inc.
Carney's Point
New Jersey

KINETIC

FREON

REG. U. S. PAT. OFF.

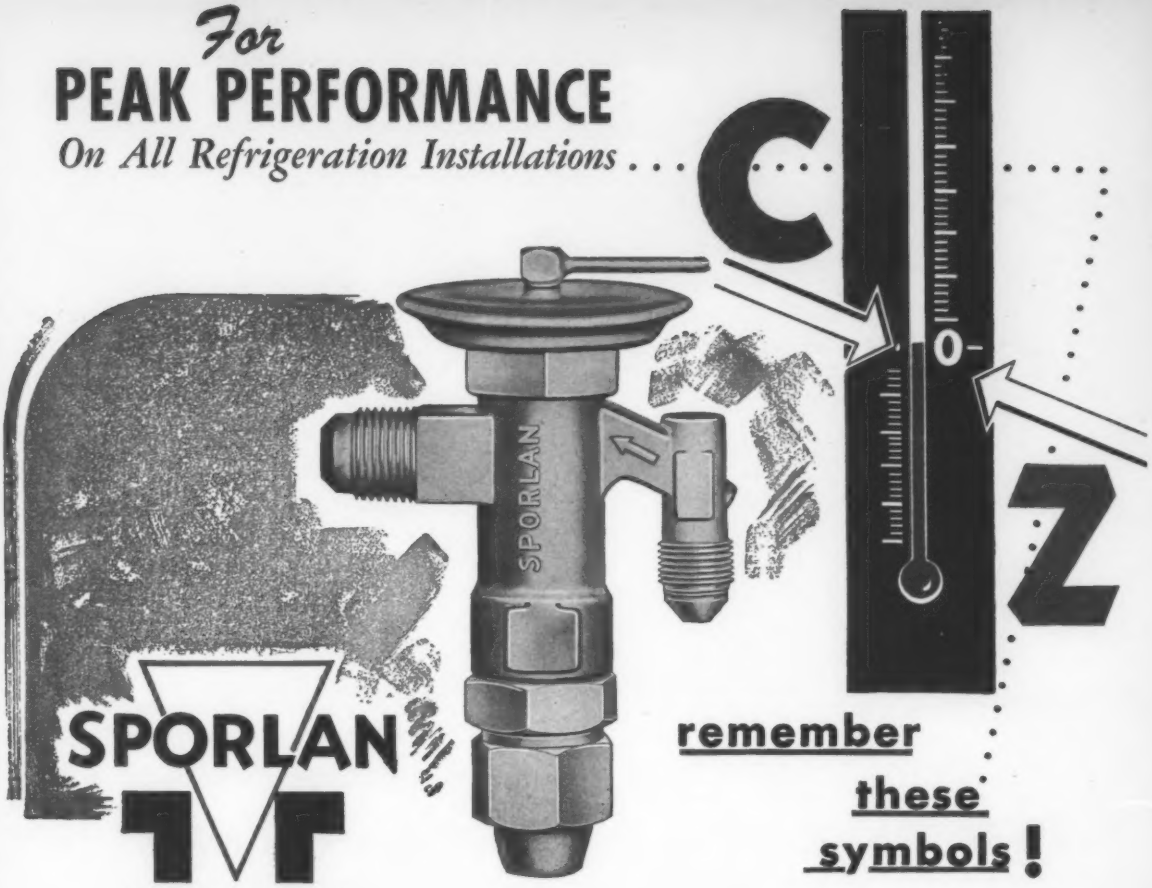
safe refrigerants

"FREON" IS KINETIC'S REGISTERED TRADE MARK FOR ITS FLUORINE REFRIGERANTS AND PROPELLENTS.

For

PEAK PERFORMANCE

On All Refrigeration Installations . . .



SPORLAN VALVES

remember these symbols!

SPORLAN "C" CHARGE FOR SUCTION TEMPERATURES **Above** ZERO

SPORLAN "Z" CHARGE FOR SUCTION TEMPERATURES **Below** ZERO

Your Sporlan wholesaler stocks the full line of Thermostatic Expansion Valves with Selective Charges to meet any operating conditions. Always consult with him before ordering and be assured of peak performance on all installations.

Sporlan Manufactures

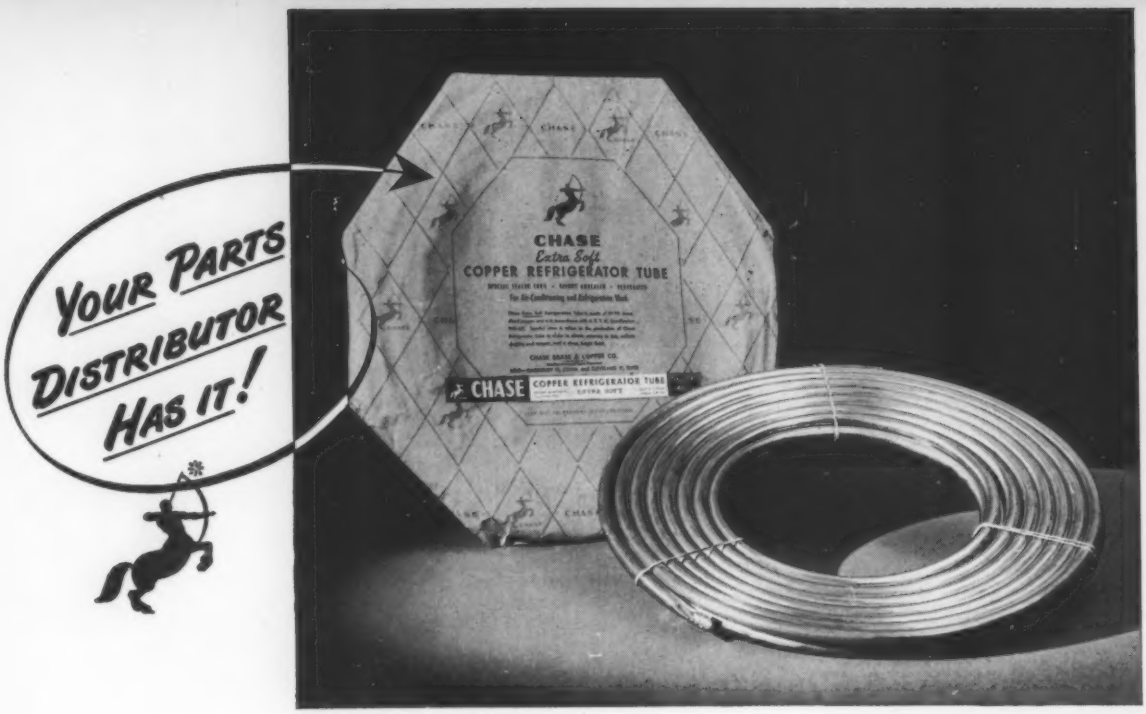
SOLENOID VALVES
SOLENOID PILOT CONTROLS
MODULATING PILOT CONTROLS
REFRIGERANT DISTRIBUTORS
STRAINERS, CATCH-ALLS
and the only
THERMOSTATIC EXPANSION VALVES
with SELECTIVE CHARGES

Use a Sporlan Catch-All on every job... The most Perfect Filter-Dehydrater ever developed!

SPORLAN VALVE COMPANY

3723 COMMONWEALTH AVENUE

ST. LOUIS 17, MISSOURI



CHASE* *Extra Soft* Refrigerator Service Tube

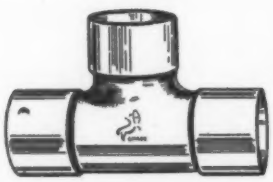
in a new, more efficient package!

EXTRA soft in temper, Chase Copper Refrigerator Service Tube can be bent easily and flared by any of the usual methods. A new, positive end seal fits anywhere that the tube will fit, "locks out" dirt and moisture.

To make it easier for you to handle Chase Copper Tube, both in stock and on the job, a more efficient package has been designed. It has a large readable label with complete specifications. It saves shelf space. It can be reused, to keep cut coils clean and identified, ready for future use.

Next time, ask your parts distributor for Extra Soft Chase Copper Service Tube. Available in sizes from ⅛" to ¾" in 50 and 100 ft. lengths. See if this isn't the handiest tube you've ever used.

*Reg. U. S. Pat. Off.



COPPER TUBE FITTINGS—Chase offers a complete line of wrought copper fittings for refrigeration and air conditioning lines. *Use* them with Chase Copper Service Tube.

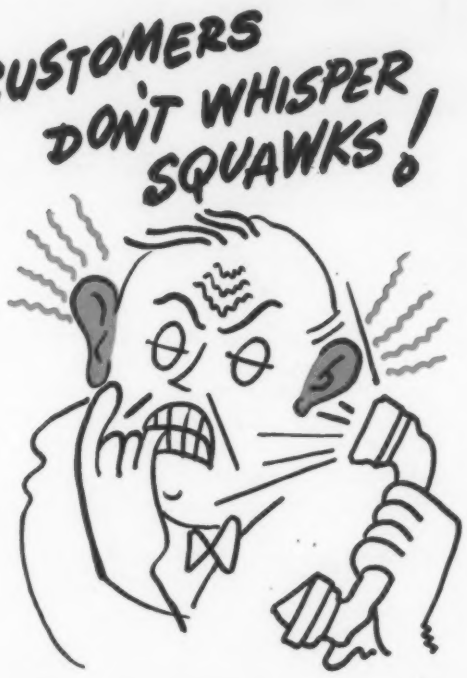
Chase
BRASS & COPPER CO.

Waterbury 91, Connecticut
SUBSIDIARY OF KENNECOTT COPPER CORPORATION

This is the Chase Network—handiest way to buy brass — INCORPORATED —

ALBANY† ATLANTA† BALTIMORE BOSTON CHICAGO CINCINNATI CLEVELAND DETROIT HOUSTON† INDIANAPOLIS JACKSONVILLE† KANSAS CITY, MO. LOS ANGELES MILWAUKEE MINNEAPOLIS NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH PROVIDENCE ROCHESTER† SAN FRANCISCO SEATTLE ST. LOUIS WASHINGTON† (†Indicates Sales Office Only)

THOUGHTS FOR MERCHANDISERS

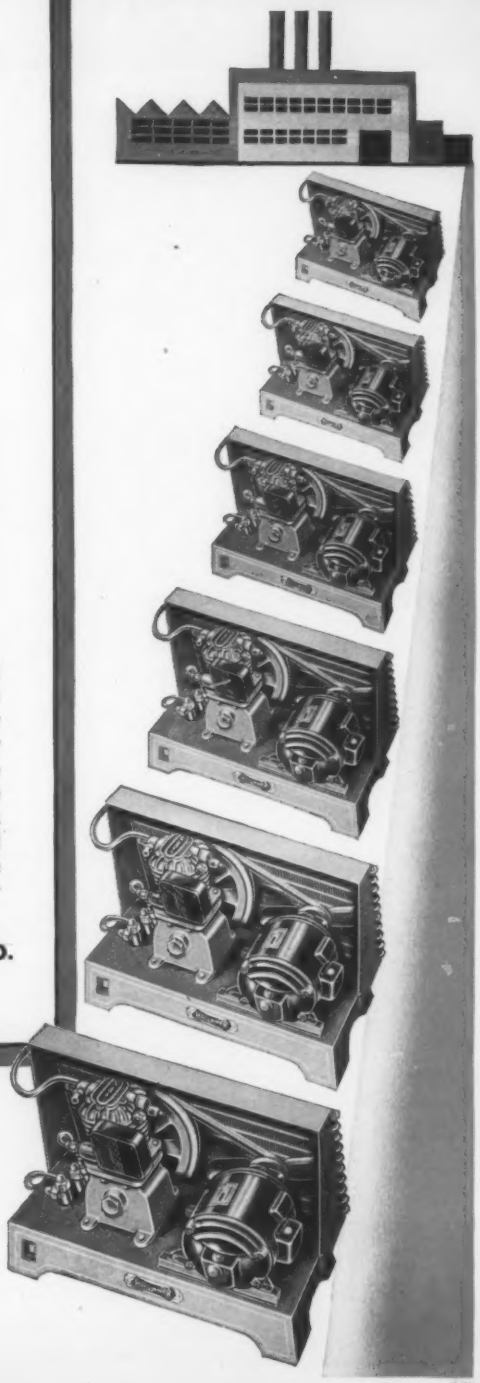


A complaining customer can be very expensive. Bad news travels fast. Good merchandising dictates the need for doing what you can to avoid the loss or displeasure of a single customer. A sound idea for protecting your reputation for quality products is to equip with dependable, long life, low maintenance condensing units. And when it comes to refrigeration condensing units no name is more highly regarded than "BRUNNER." One good customer is worth more to you than the cost of any condensing unit so why settle for anything less than the best?

BRUNNER MANUFACTURING CO.
Utica 1, New York, U. S. A.

BRUNNER
SINCE 1906

REFRIGERATION
helps you serve better



AIR AND WATER COOLED MODELS
¼ HP. TO 25 HP.

BRUNNER
SINCE 1906

KNOW YOUR REFRIGERANT
CORROSION LIMITS

EFFECTS OF MOISTURE

Moisture in a refrigerating system may cause any or all of the following:

1. Freezing up at expansion valve or capillary tube, ice in the evaporators.
2. Corrosion of metals to form sludge.
3. Copper Plating.

RESULTS OF TESTS CONDUCTED ON STEEL

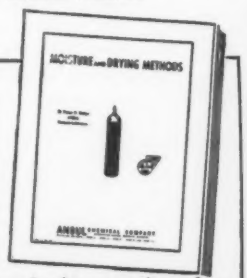
Refrigerant	% Water by Weight	Results
Sulfur Dioxide	0.03	Slight discoloration
	0.10	Slight scale
	0.15	Heavy scale
		Presence of air did not affect results
Methyl Chloride	0.02	Slight discoloration
	0.03	Marked discoloration
		Very slight scale
	0.05	Moderate to heavy scale
		Presence of air increased corrosion in all cases
"Freon-12"		Similar to methyl chloride

FACTS REVEALED

1. Corrosion of metals occurs whenever the amount of water present exceeds fairly well defined limits.
2. Water reacts with sulfur dioxide, methyl chloride, "Freon-12" and other refrigerants to form acids.
3. These acids react with steel, copper, and aluminum parts of a refrigerating system to form definite metallic salts (sludges).
4. In a sulfur dioxide system the amount of moisture tolerable is higher than in a methyl chloride or "Freon-12" system but corrosion, once begun, proceeds more rapidly in a sulfur dioxide system.
5. Corrosion in a butane or isobutane system is due to the direct action of the water and perhaps, air, on metals.
6. Moisture tolerances are higher for copper, brass and aluminum than for steel.
7. Moisture tolerances are lower at higher temperatures found in condenser and compressor than at room temperature.
8. Corrosion is much worse in the presence of air in all refrigerants except sulfur dioxide.
9. Approximately 90% of the sludges produced in refrigerating systems are due to moisture; the others are associated with oil and minor causes.

LIQUID Sulfur Dioxide ANSUL* LIQUID Methyl Chloride ANSUL*

*REG. U. S. PAT. OFF.



SEND FOR THIS BULLETIN

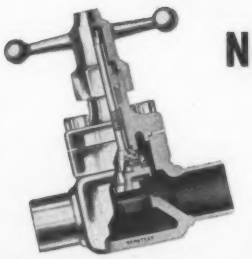
An informative reprint, "MOISTURE and DRYING METHODS," will be sent on request. No obligation. Send for it today.

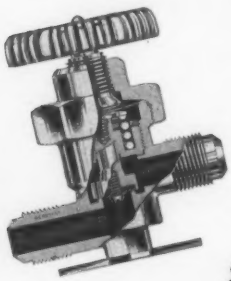
ANSUL WHOLESALERS are ready and equipped to render an intelligent, co-operative service to refrigeration engineers and maintenance men on problems which arise from time-to-time in the operation of refrigerating systems.

ANSUL REFRIGERANTS ARE AVAILABLE AT LEADING WHOLESALERS EVERYWHERE

ANSUL CHEMICAL COMPANY
REFRIGERATION DIVISION, MARINETTE, WISCONSIN

DISTRIBUTORS FOR KINETIC'S "FREON-11," "FREON-12," "FREON-21," "FREON-22" AND "FREON-113"





Need Technical Assistance on VALVES and FITTINGS?

.... *other Installation Problems?*

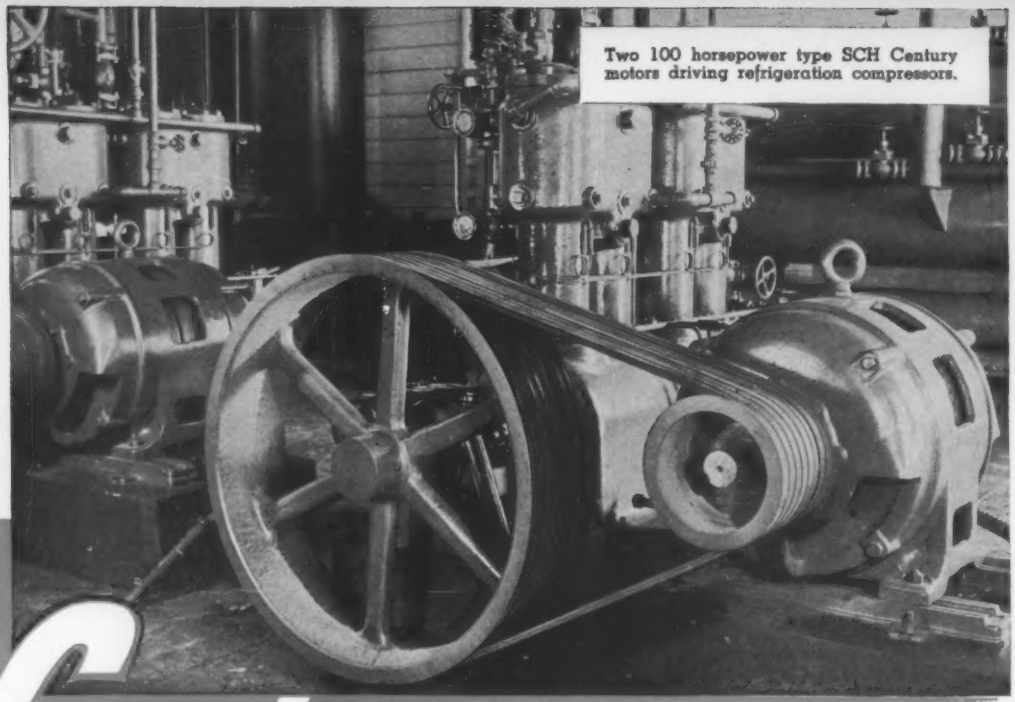
RIGHT in your locality . . . your Kerotest Wholesaler offers complete technical assistance . . . up-to-date trade information and the services of trained personnel to help you solve your most baffling installation problems with Quality Kerotest Valves and Fittings.

His ample stocks and speedy delivery will expedite your needs . . . and for scarce items . . . no one is better equipped to come to your aid. For the best in valves and fittings and the most comprehensive service . . . depend on Kerotest and see your Kerotest Wholesaler regularly.

See your KEROTEST *Wholesaler*

AMERICA'S FIRST NAME IN QUALITY VALVES

KEROTEST MANUFACTURING CO.
PITTSBURGH, PA.



Two 100 horsepower type SCH Century motors driving refrigeration compressors.

Century TYPE SCH MOTORS

Provide the Power You Need to Start Compressors Easily · · Smoothly · · Quietly

High starting torque, with low starting current, makes type SCH Century motors ideal for driving reciprocating refrigeration compressors. These motors are designed to bring heavy loads up to speed quickly, yet smoothly and quietly. They give you top performance because they exactly meet the load requirements of refrigeration compressors.

Century motors are ruggedly built, with accurately machined feet and rigid frame and end bracket construction. Carefully balanced rotors contribute to Century motors' remarkable freedom from vibration throughout their exceptionally long life.

Century builds a complete line of electric motors and generators, fractional and integral horsepower, in the popular sizes to meet the requirements of appliances, industrial production and commercial needs.

Specify Century for all your electric motor requirements.

Century C MOTORS

CENTURY ELECTRIC COMPANY, 1806 Pine Street, St. Louis 3, Missouri

Offices and Stock Points in Principal Cities

315

HERE'S WHAT'S *NEW* AND *BETTER*

about Iceberg Refrigerated Lockers

For blast-freezing. (Above) Special blast-freezing drawers available for sharp freezing. Blast-freezing drawers easily and quickly interchangeable with regular drawers in section next to refrigeration sections.

The frozen food locker with zero-cold *built* in and *kept* in . . . no cold room required . . . flexible capacity to fit changing needs.

They are the only completely factory engineered, fully insulated, self contained, sectional "Warm Room" frozen food lockers providing "custom tailored" installations to fit your needs. Easily installed, capacity increased or disassembled for relocation. All required, level floor, electric and water connections to install in less than 24 hours. Owners or customers serve themselves in normal room temperatures. Perfect for locker rental or bulk storage. Blast-freeze drawer section provides sharp freezing. For complete details use coupon below.

How it is used. (Right) Stored foods readily accessible at all times. Each drawer easily identified by name card. Drawers roll on top-suspended roller bearings. No sticking due to freezing. Drawers seal themselves from rest of unit while open. Automatic bar lock insures complete sealing when drawer is closed.

Unit illustrated (Left) is Iceberg Refrigerated Locker Model 660—60 drawers (drawers on both sides), each approximately 6 cu. ft. net storage capacity; 240 lbs. meat loading per drawer or its equivalent in other frozen foods. Models in Series 600 range in capacity from 10 to 80 drawers. Models in Series 300 (not shown here) with drawers on one side only, range in capacity from 5 to 40 drawers.

ICEBERG
REFRIGERATED LOCKERS
FROZEN FOOD STORAGE MADE EASY

Get portfolio of complete features and detailed specifications of ICEBERG REFRIGERATED LOCKERS. *Absolutely free!* Just use coupon.

CLIP AND MAIL—TODAY!

Iceberg Refrigerated Locker Systems, Inc., Dept. RI-3
Empire State Building,
New York 1, New York.

Send me, ABSOLUTELY FREE, portfolio of complete features and detailed specifications.

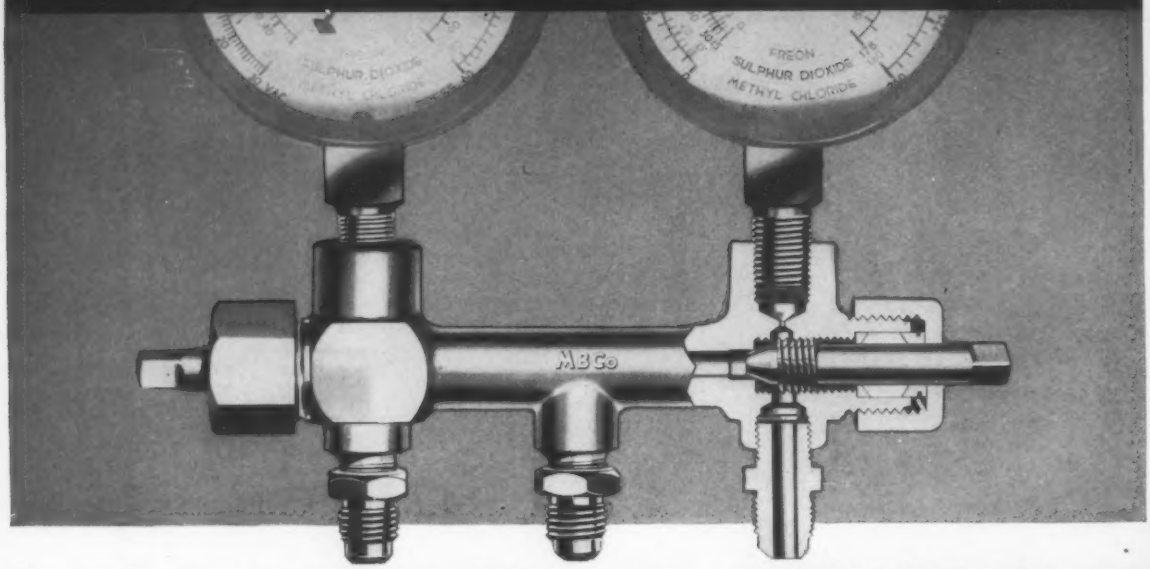
Name.....

Street & No.....

City, Postal Zone & State.....

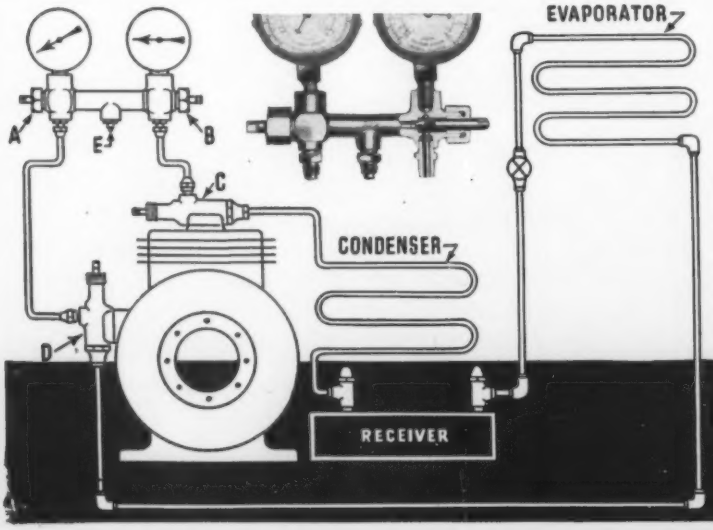
MUELLER BRASS CO. TESTING MANIFOLD

A Handy Tool for the Serviceman



The Mueller Brass Co. Testing Manifold is a service tool. It enables a service man to quickly install pressure gauges to diagnose trouble, and facilitates charging, purging, adding oil, etc.

This device allows the service man to watch the pressure gauges during charging and purging. It saves considerable time on almost any service work that must be done on the compressor.



DIRECTIONS FOR USE

1. To Observe Operating Pressures

Valve A—Closed Valve C—Back Seat Cracked Open
Valve B—Closed Valve D—Back Seat Cracked Open

2. To Charge Refrigerant Through Compressor

Connect Refrigerant Drum to E
Valve A—Open Valve C—Back Seat Cracked Open
Valve B—Closed Valve D—Closed—Front Seated

3. To Purge Receiver

Connect Purge Line to E
Valve A—Closed Valve B—Open
Valve C—Back Seat Cracked Open

4. To Charge Liquid Into High Side

Connect Refrigerant Drum to E
Valve A—Closed Valve B—Open
Valve C—Mid Position

5. To Build Up Pressure in Low Side for Control Setting or to Test for Leaks

Seal E with Seal Cap
Valve A—Open Valve C—Back Seat Cracked Open
Valve B—Open Valve D—Mid Position

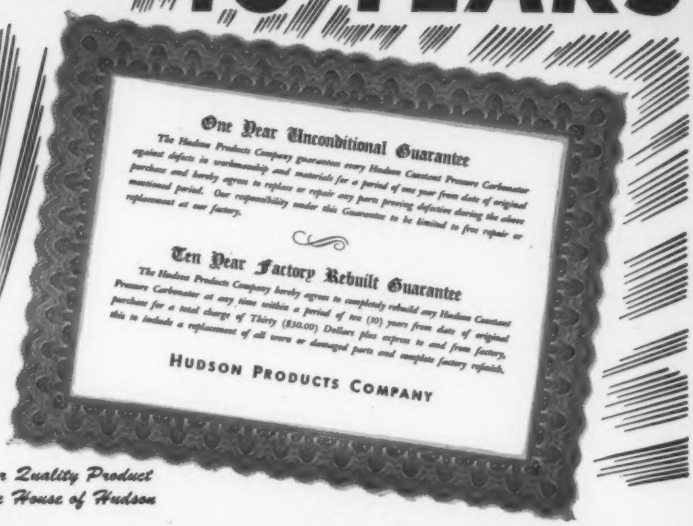
6. To Charge Oil Through Compressor

Connect Oil Supply to E
Valve A—Open Valve C—Open—Back Seated
Valve B—Closed Valve D—Closed—Front Seated

MUELLER BRASS CO.
PORT HURON, MICHIGAN

ONLY HUDSON
DARES TO GUARANTEE
A CARBONATOR FOR 10 YEARS

Another Quality Product from the House of Hudson


One Year Unconditional Guarantee
The Hudson Products Company guarantees every Hudson Constant Pressure Carbonator against defects in workmanship and materials for a period of one year from date of original purchase and hereby agrees to replace or repair any parts proving defective during the above mentioned period. Our responsibility under this Guarantee to be limited to free repair or replacement at our factory.
Ten Year Factory Rebuilt Guarantee
The Hudson Products Company hereby agrees to completely rebuild any Hudson Constant Pressure Carbonator at any time within a period of ten (10) years from date of original purchase for a total charge of Thirty ($30.00) Dollars plus express to and from factory, this to include a replacement of all worn or damaged parts and complete factory refinish.
HUDSON PRODUCTS COMPANY

THIS BROAD GUARANTEE COVERS THE
HUDSON *CONSTANT PRESSURE* CARBONATOR

Quite naturally, such a guarantee could only be made on a product that is mechanically perfect—dependable—and trouble-free. There are obvious reasons for such a guarantee. . .

The HUDSON **Constant Pressure** Carbonator is of sensationally new scientific design and precise construction. Think of it! With this unit, there are no more space consuming carbonator installations in dirty, damp basements, no more bulky soda coils, no more replacements of motors, or pump packings, pinion gears—no more oiling and greasing of moving parts.

Here, at last, is a carbonator that eliminates the usual problems of making soda water at the point of sale. The HUDSON Carbonator is a complete, self-contained, motorless unit that delivers a steady flow of sparkling, carbonated water—at CONSTANT PRESSURE up to 125 pounds at the draft arm, regardless of water pressure in the city water line. This unusually compact unit takes little more space than 2—1 qt. beverage bottles. Measures only 16¾" x 9¾" x 3¾" overall and weighs only 17 pounds. It is entirely automatic, with 2 reciprocating cylinders that alternate in operation to provide a minimum capacity of 25 gallons per hour. Will also operate Coca-Cola dispensers and root beer barrels. May be installed in any sweet water bath or other conventional cooling system.

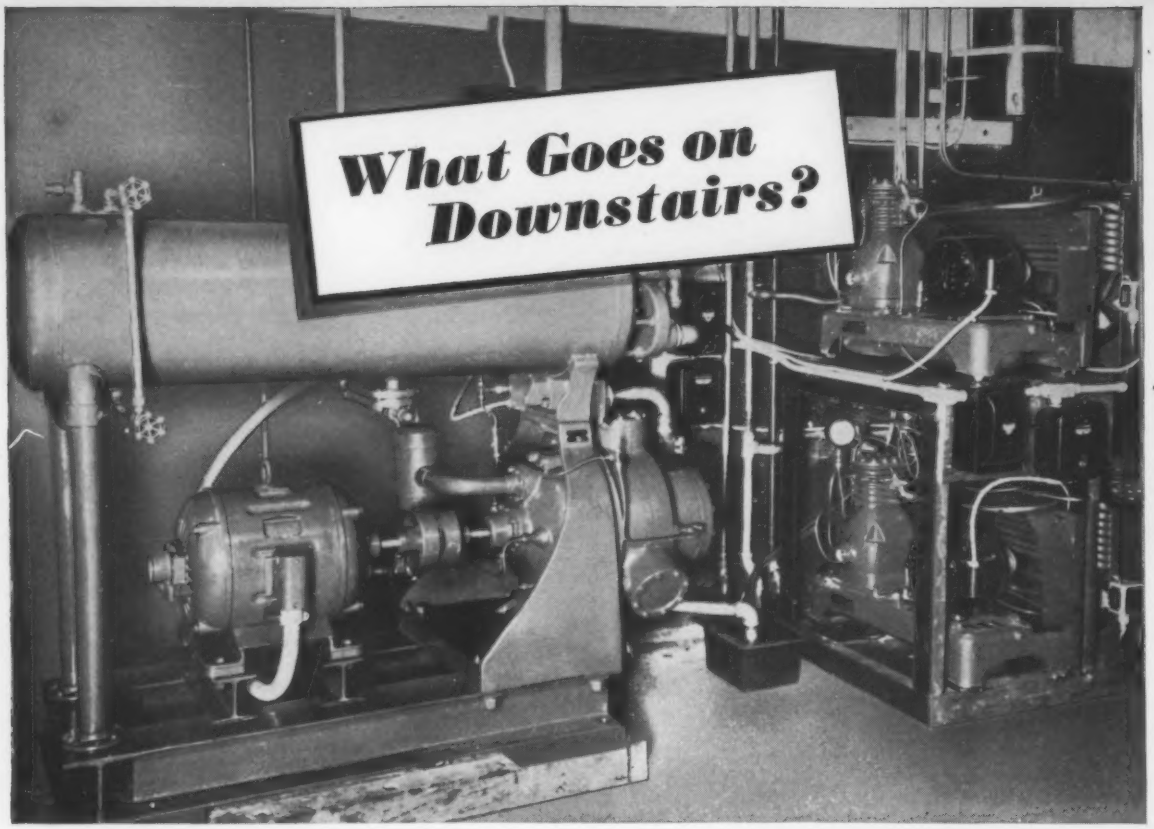
HUDSON **Constant Pressure** Carbonators are now original or De Luxe equipment on many well-known soda fountains. There are nearly 10,000 HUDSON Carbonators now in use daily throughout the world.

CASH IN ON THE EXTRAORDINARY DEMAND FOR HUDSON *Constant Pressure* Carbonators!

NOTE: Deliveries of HUDSON Constant Pressure Carbonators are being made as rapidly as possible. Write, on your own letterhead, for further details. Please indicate the territory you now cover and the products you are handling.

HUDSON PRODUCTS CO. Inc.
2135 EAST CANFIELD AVE.
DETROIT 7, MICH.

EXPORT DIVISION ▪ 211 Woodward Avenue, Detroit 1, Michigan, Cable: FORACO

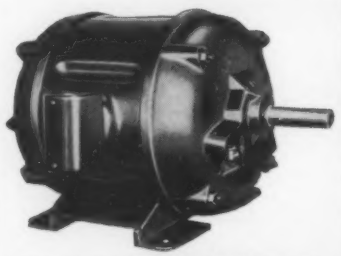


WAGNER *Quality* MOTORS

help customers shop in cool comfort . . .

Busy shoppers never give a thought to what goes on downstairs. They're not interested in motors that drive the apparatus responsible for their comfort. But smart merchandisers know that comfort quickly turns prospects into customers. They know, too, that the dependability of the motors that drive air conditioning, heating, and ventilating equipment is of paramount importance. That's why you find hundreds of thousands of Wagner Quality Motors on the job everywhere driving all types of apparatus that help customers shop in comfort.

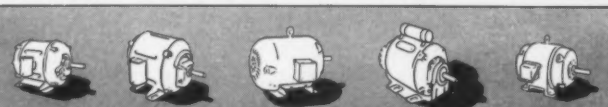
Today, hundreds of equipment manufacturers have standardized on these outstanding Wagner Quality Motors. Wagner can help you, too. If you manufacture or use motor-driven equipment, it will pay you to investigate Wagner Motors. Users of Wagner motors also profit by our quick, convenient, nation-wide service facilities. Twenty-nine branch offices, located in principal cities, are ready to give you service and advice. Contact our nearest office, or write Wagner Electric Corporation, 6442 Plymouth Ave., St. Louis 14, Mo., for bulletins on the complete line.



The motor illustrated above is typical of the Wagner complete line of polyphase and single-phase motors.

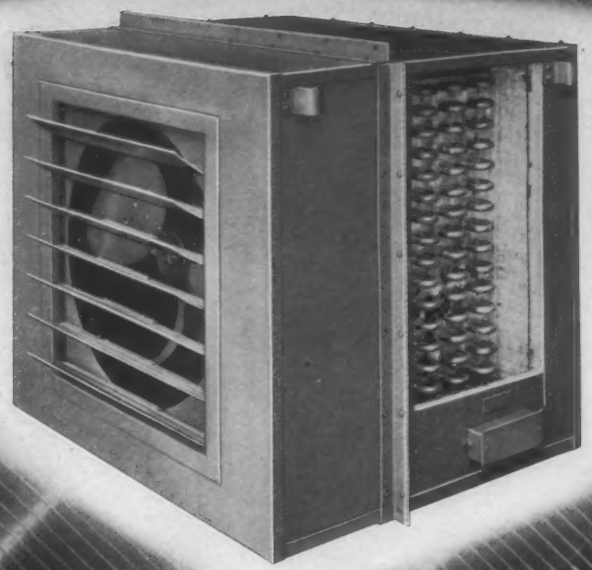
Consult Wagner Engineers on all Electric Motor Problems

Wagner Electric Corporation
EST. 1891



M47-4

• ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES • AUTOMOTIVE PRODUCTS •



ELECTRIC DEFROST LT UNITS

(U. S. Patent 2266373)

- Compact ceiling type — High capacity — Low cost
- 7 Sizes — Ammonia or Freon — ½ to 2½ tons @ 12° TD
- Defrosted electrically — Manual or automatic defrosting
- Insulated casing — Sectional doorway-sized

LOW TEMPERATURE applications: (1) Ice cream hardening rooms (2) Locker plants — Sharp freezers (3) Frozen foods — Cold storage — Blast freezers

Write for Bulletin 408

MARLO

HEAT TRANSFER SURFACE

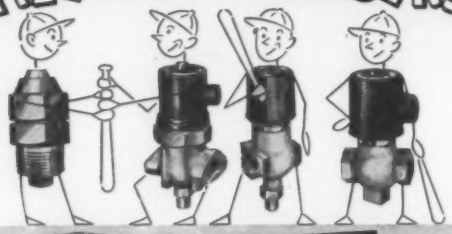
MARLO = HEAT TRANSFER
Since 1925

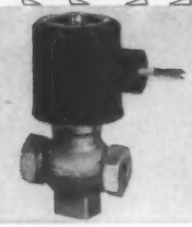
Ball-Bonded Blast Coils — Cooling and Heating • Air Conditioning and Refrigeration Apparatus • Industrial Blower Units • Unit Coolers Evaporative Condensers and Coolers • Low Temperature Apparatus Cooling Towers

MARLO COIL COMPANY

ST. LOUIS 10, MISSOURI

BRILLIANT MEMBERS OF THE "DETROIT" TEAM





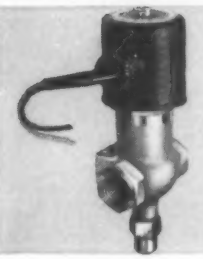
No. 683-3

This reliable valve, like all "Detroit" Solenoids is designed for use with any liquid not injurious to brass. Furnished with three sizes of orifices, 1/8", 3/16", and 7/32".

Nominal capacity—liquid line

1/8" orifice	1½ tons Freon-12	3¾ tons Methyl
3/16" orifice	3 tons Freon-12	6½ tons Methyl
7/32" orifice	3¾ tons Freon-12	5⅛ tons Methyl

¼" female N.P.T. connections.



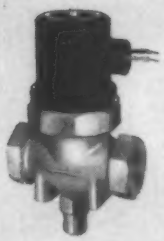
No. 681

The No. 681 is of the pilot operated type and requires a minimum pressure drop of 1 psi to operate the piston.

Nominal capacity—liquid line

7½ tons Freon-12—17 tons Methyl

½" female N.P.T. connections.



No. 686

The No. 686 is a heavy duty, large capacity pilot operated valve which requires a pressure drop of 1¾ psi to operate the piston when used with refrigerants, 5 psi on water. It is made with 2 sizes of orifice, ½" and 5/8".

Nominal capacity—liquid line

½" orifice	11 tons Freon-12	23 tons Methyl
5/8" orifice	17 tons Freon-12	34 tons Methyl

No. 685 Strainer

Fits any Threaded Solenoid Valve. Fine mesh strainer of Monel metal to resist corrosion. Slips into adapter tube, and is held in place by tubing and hex nut. Adapter tubes furnished with three sizes of connections to valve, and six sizes of tubing connections:

Adapters with ¼", 3/8" or ½" SAE tubing connections are available with ⅜" MPT Valve connections.

Adapters with ½" or 5/8" SAE tubing connections are available with ½" MPT Valve connections.

Adapters with ½" or 5/8" SAE tubing connections are available with ½" Valve connections.

Cleaning or replacing strainer element very easy—just unscrew the hex nut.

"DETROIT" SOLENOID VALVES *for* Refrigerants · Water · Air

"Detroit" Solenoid Valves, designed expressly for refrigeration and air conditioning work, are the result of many years' experience with all types of refrigeration valves.

Their performance is of the same exceptional quality found in "Detroit" Expansion Valves such as No. 673. "Detroit" Solenoid Valves are brilliant members of the "Detroit" Team.

POWERFUL They will lift against high pressures.

QUIET Design of plunger and guide tube minimizes or eliminates objectionable A-C hum.

DURABLE Moistureproof coils, bodies of non-porous cast brass, long wearing needles and seats give these valves exceptionally long life.

EASILY INSTALLED Substantial mounting boss on valve body provides easy means for rigid mounting.

EASILY SERVICED Easily disassembled and cleaned without disconnecting refrigerant lines or wiring.

POSITIVE CLOSING Non-magnetic needle and seat and strong "kick off" spring assure tight closing.

ECONOMICAL Low current demand (15 watts open on largest valve). Replacement parts if required are inexpensive.

FOUR WIRE COIL A four lead coil is available on any "Detroit" Solenoid Valve, for either 115 or 230 volt use.

DETROIT LUBRICATOR COMPANY

DETROIT

General Offices: 5900 TRUMBULL AVENUE, DETROIT 8, MICHIGAN

Division of American Radiator & Standard Sanitary Corporation

Canadian Representation: RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

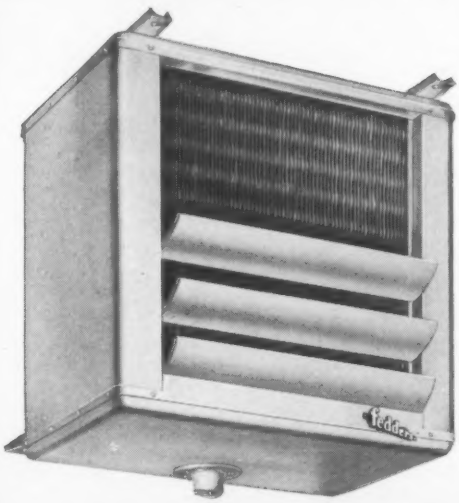
"Detroit" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators

Again, as before....

REFRIGERATION MEN

rely on FEDDERS *Ratings*

FEDDERS *certified* RATINGS



● The accuracy of Fedders ratings has not only built a reputation but a tradition in the refrigeration industry. Men who sell, install and service commercial refrigeration equipment have learned by experience that they safeguard their work . . . their reputation . . . and their profits when they rely on Fedders equipment.

Fedders catalog ratings are certified ratings based on exhaustive tests in the Fedders laboratory, — one of the best equipped in the industry.

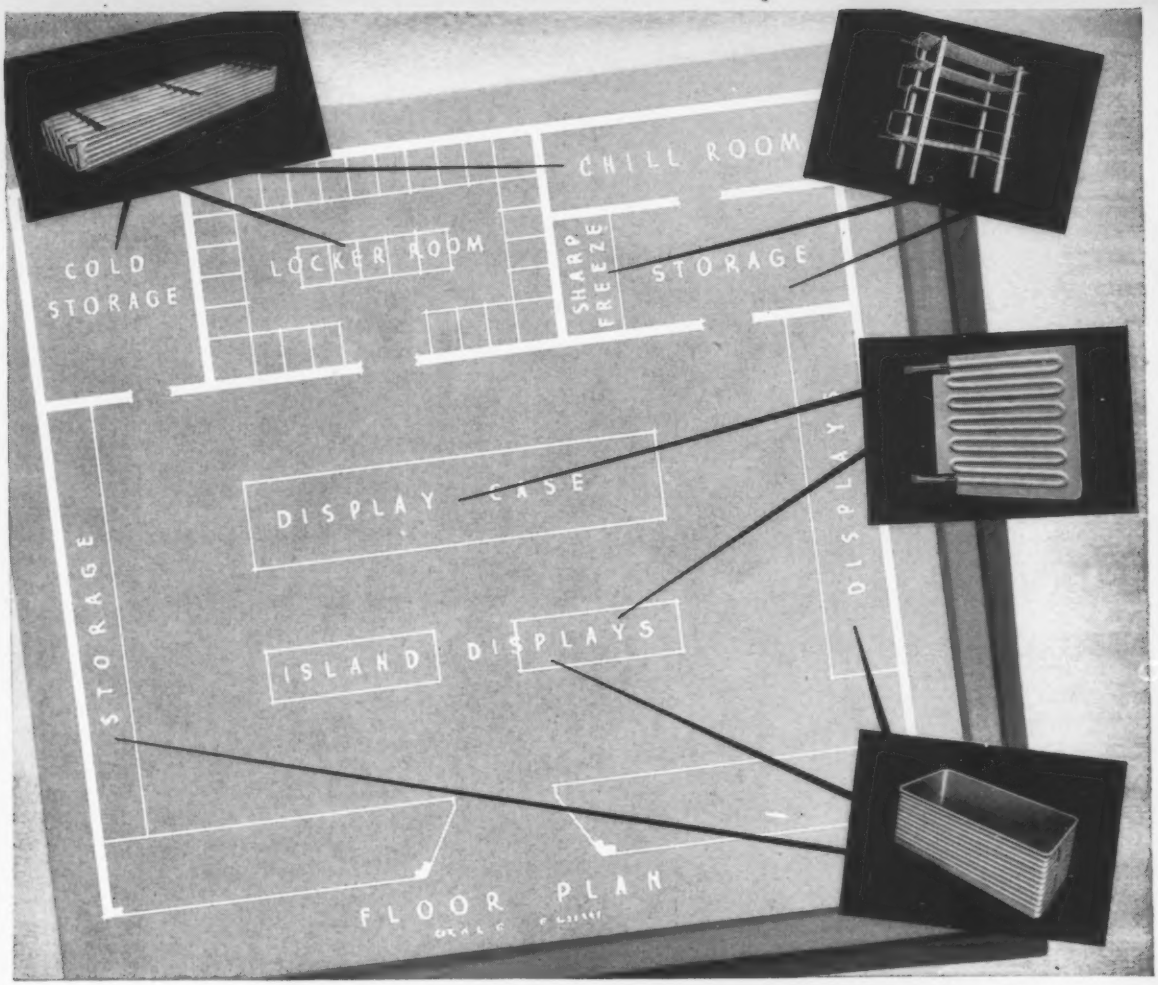
Fedders Unit Coolers are built in a well graduated line of sizes in suspended and panel types. Write for current bulletin.

FEDDERS-QUIGAN

CORPORATION

BUFFALO, NEW YORK

Heat Transfer Specialists Since 1896



SPECIFY KOLD-HOLD FOR YOUR LOCKER PLANT PLANS

Kold-Hold equipment is designed for efficient, economical refrigeration. It is unequaled for locker plant applications. Constructed simply and rigidly, lightweight Kold-Hold Refrigeration Units have only one wall between the refrigerant and the contacting air. Tubes, pipes and unnecessary refrigeration joints are eliminated. The refrigerant flows through the stamped steel serpentine passages and contacts a maximum surface area creating an exceptionally high rate of heat acceptance and equally fast temperature pull down.

Easy to install and maintain, Kold-Hold Evaporator Type Banks, Plate Stands, Conversion Plates and Liners fit into every stage of locker plant processing. They hold constant, controlled temperature within the desired ranges for such locker operations as thorough chilling, fast action sharp freezing and constant low temperature storage. Kold-Hold refrigeration enables the faster processing of more perishables . . . maintaining their fresh, wholesome flavor and natural color indefinitely.

Write for complete data on Kold-Hold Locker Plant refrigeration. Ask for a free copy of the new Kold-Hold Catalog showing the latest equipment in this line.

KOLD-HOLD

Jobbers in Principal Cities

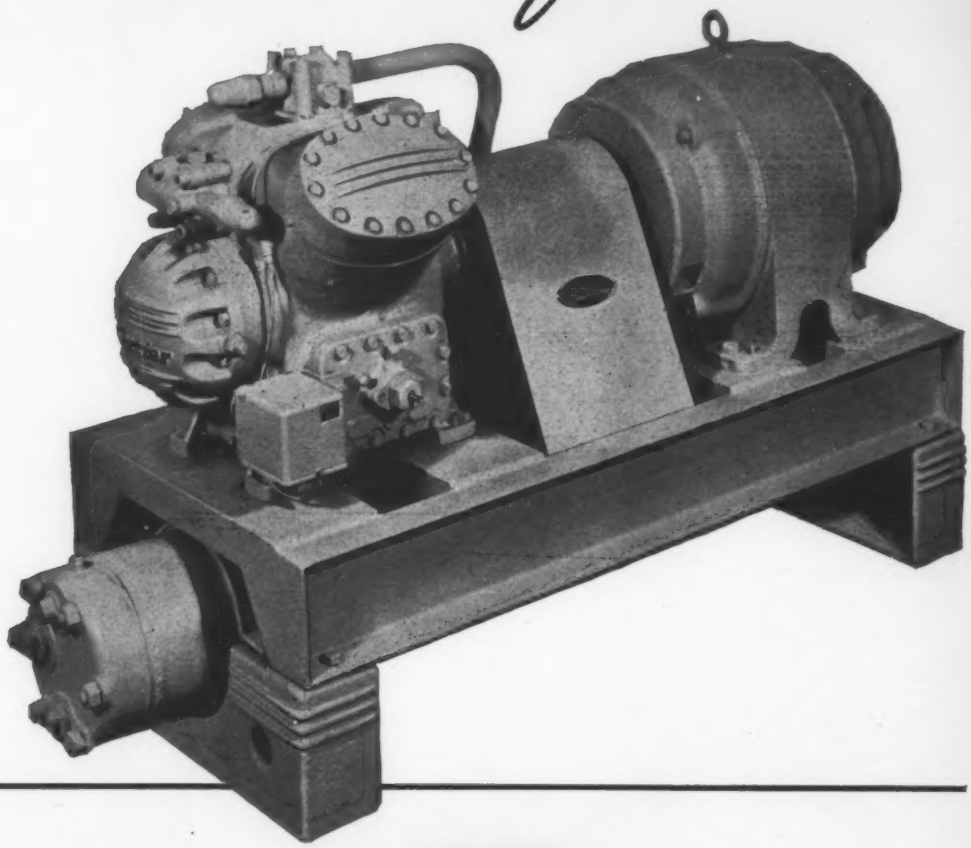
PROCESSING TRANSPORTATION STORAGE

protects every step of the way

KOLD-HOLD MANUFACTURING COMPANY - 503 E. HAZEL STREET, LANSING 4, MICHIGAN

THIS COMPRESSOR GIVES A

Continuous Performance



It's engineered for heavy duty, day after day. It's designed for freezing, chilling and storage plants and any other application where refrigeration must be absolutely dependable. It's the Carrier 5F40.

This husky new Carrier compressor is quality-built for long economical service. Every part is selected for its resistance to wear. Advanced design assures quiet running and trouble-free operation. Cylinder block and crankcase are nickel-alloy iron. Ring-plate valves are non-flexing and vapor cushioned. Stationary bellows-type shaft seals are continuously immersed in oil. Built-in capacity control, with unloaded starting, permits use of normal torque motors and provides balanced capacity control. The 5F40 is available in 10-hp. capacity.

Carrier offers a complete line of refrigerating compressors and condensing units. Every one bears the stamp of Carrier research and refrigeration leadership. That's an advantage that goes only with the Carrier name. Carrier Corporation, Syracuse, New York.

Free Compressor Book. **You may now have the new book, "Carrier Refrigeration Compressors and Condensing Units." It's filled with data on Carrier units. Write for your free copy today.**

Carrier

AIR CONDITIONING
REFRIGERATION
INDUSTRIAL HEATING

NEW!

ALL THE WAY THROUGH

This Rugged American Charging Hose

THERE ARE ADVANTAGES all along the line in the new American Flexible Refrigeration Charging Hose. There's added strength, greater resistance to chemical attack and high pressures—yet the same flexibility for working in tight spaces.

Accurate, 7/16"—20 SAE fittings are securely swaged on by a special process developed by American Metal Hose. The whole assembly is impervious to moisture . . . stands up longer under the hardest use.

You can obtain this new flexible hose from your refrigeration or air conditioning supply house, in two lengths (2 ft. and 3 ft.). Each unit is individually packed. Special 6" copper tube end pieces, complete with nuts, are available separately if desired. Write for literature. 47821

Inner core of firmly interlocked stainless steel.

Synthetic seal covering over inner core.

Braided steel wire over synthetic covering.

Outside covering of extruded synthetic completes moisture-tight hose.

Precision machined special bronze fitting permanently attached.

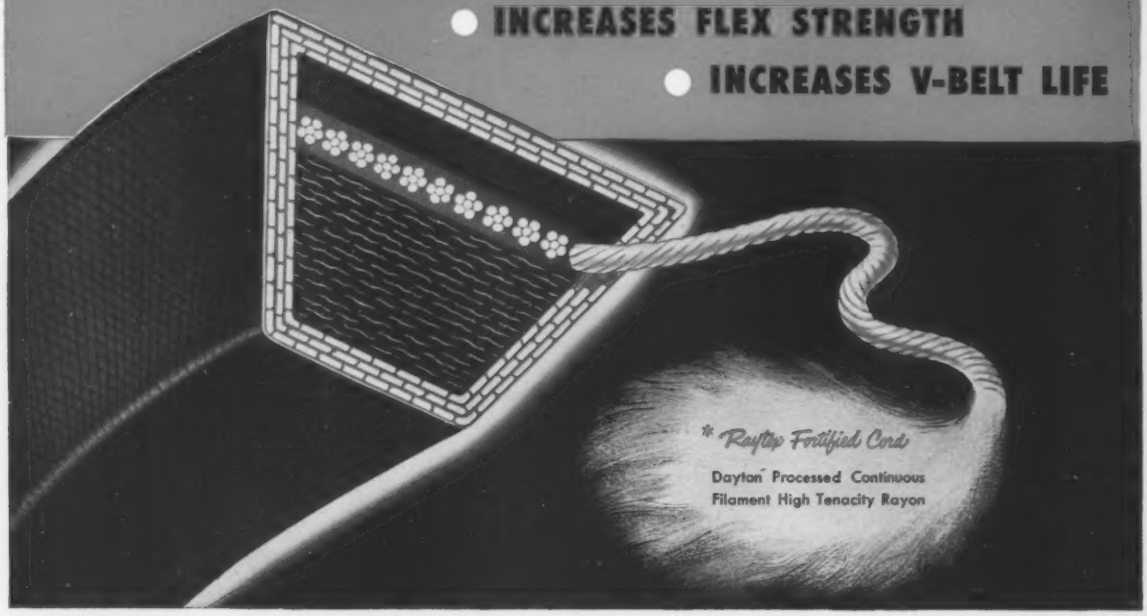
ANACONDA
Brass tubing by customer

American
METAL HOSE

THE AMERICAN BRASS COMPANY
American Metal Hose Branch
General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company
In Canada: ANACONDA AMERICAN BRASS LTD.,
New Toronto, Ont.

NOW! *Rayon* IN DAYTON V-BELTS

- MINIMIZES BELT STRETCH
- INCREASES FLEX STRENGTH
- INCREASES V-BELT LIFE



MINIMIZES V-BELT STRETCH—Low stretch, high tenacity *Raytex Fortified Rayon Cord, used in the neutral or strength section of Dayton V-Belts, is manufactured in continuous filaments . . . then twisted together to form cable-like cord, just as steel wires are twisted together to make a steel cable. That's why Raytex Fortified Rayon Cords practically eliminate stretch in the new Dayton V-Belts.

INCREASES FLEX STRENGTH—Because Rayon Cords are made of continuous filament, high tenacity Rayon, they combine high strength with greatest flexibility. This enables Dayton V-Belts to flow smoothly around pulleys while transmitting power at maximum efficiency.

INCREASES V-BELT LIFE—Because Rayon Cords have greater strength in small diameters, Dayton Belt Engineers are now able to build a more compact, thinner neutral section of maximum pulling power. Thus, bending stresses are minimized which, in turn, lengthens the life of Dayton V-Belts.

The new Dayton V-Belts built with *Raytex Fortified Rayon Cord are now in production . . . will be available soon in all sizes. Write for free sample of this new cord and descriptive booklet.

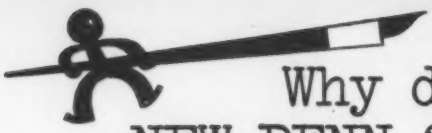
DAYTON RUBBER • DAYTON, OHIO

Branch Offices: Atlanta • Boston • Chicago • Cincinnati
Cleveland • Dallas • Dayton • Detroit • Los Angeles
Minneapolis • New York • Philadelphia • St. Louis

Dayton Rubber

THE MARK OF TECHNICAL EXCELLENCE IN NATURAL AND SYNTHETIC RUBBER

THE WORLD'S LARGEST MANUFACTURER OF V-BELTS



QUESTION:

Why do you like the NEW PENN 270 SERIES CONTROL?

INQUIRING REPORTER

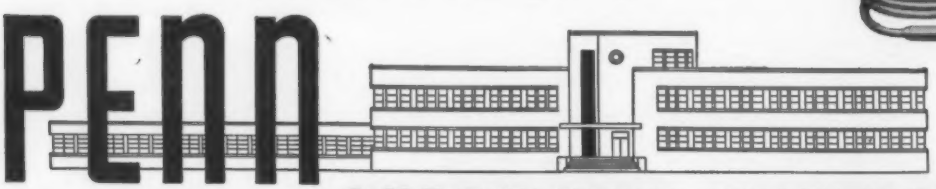
A refrigeration expert in Dallas had plenty of reasons, including: The PENN 270 Series Control can control multiple systems. It can control two separate load circuits. And when wired in single phase circuits as a two-pole switch, it always breaks the "hot" line.

I talked to a refrigeration designer in Chicago. He said he liked this new and different control because it meant he could control polyphase motors (where protection against single phasing was provided) without line starters.

A West Coast refrigeration wholesaler was really enthusiastic. He said he never saw a control so packed with versatility, simplicity, efficiency and dependability.

In New York a service man told me the new PENN 270 got his vote because of greater dependability, greater accuracy, increased safety, better electrical performance, ease of installation and simple adjustments.

• Investigate the new PENN 270 Series Control for yourself. It's *the first and only line* in the refrigeration and air conditioning fields to feature a load-carrying, 2-pole switch. At the right is Series 270 and 272 PENN "Single" temperature or low side pressure controls. Also (not shown) Series 271 and 273 PENN "Dual" Controls which combine in one unit a temperature or low side pressure actuated mechanism and built-in high pressure safety cut-out. *Penn Electric Switch Co., Goshen, Ind.* Export Division: 13 E. 40th St., New York 16, U.S.A. In Canada: Penn Controls, Ltd., Toronto, Ontario.



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

BTU's

News • Laws • Trends

Facts and Figures. Nearly 79.5% of the families in the U.S. today possess mechanical refrigerators, according to a report prepared by the National Family Opinion research organization of Toledo, Ohio, 14.3% of families use ice refrigerators.

Here's a quick run-down on other information revealed in the National Family Opinion report: 71.6% of the mechanical units are electric, 7.8% are gas-operated. Electric refrigerator ownership is highest (78.7%) in the South Atlantic states, lowest (63%) in the Rocky Mountain and West South Central area. Gas refrigerator ownership are most common in the West South Central states, where ownership is 13.1%. Ice refrigerator ownership is highest (18.7%) in the West North Central states, second highest (18.3%) in the West South Central area. Highest percentage of ice refrigerator users is in cities of 2500 to 5000 population, lowest percentage in cities of 1 million population and over. Electric refrigerators are owned by 97.3% of families with incomes of more than $5000 per year.

All these figures are based on 3000 "balanced" interviews distributed nationwide and closely paralleling national census averages. Here's a switcheroo: highest percentage of electric refrigerators (80.4%) was found in homes where the housewife was past 55. Maybe age and wisdom actually do go together, as the proverb says.

Storm Warning. While it isn't likely that 1947 home freezer production will meet consumer demand, the obvious potential production facilities point to a period when the industry won't have a place for all who are entering the business. From a present market "scratch" of less than 150,000 units in use, 1947 will add something like 400,000, leaving a foreseeable natural market of at least as many units as a starter for 1948.

This outlook on the home freezer market has been voiced by F. M. Slasor, manager of the refrigeration sales division of Hotpoint, Inc. The home freeezer, he said "is in the same situation as was the refrigerator 20 years ago, and it is not a question of whether there is a wide demand; rather, it is a question of merchandising."

Other points Mr. Slasor made are (1) the sale won't start until the housewife says she's not interested; (2) the canning season will be the peak sales season for home freezers; (3) the question won't be so much "who'll buy home freezers?" but rather "whose unit will they buy?" and (4) wise dealers will concentrate on selling the brands that will cause them the fewest service headaches later.

More Steel for 1947. Here's the outlook on sheet and strip steel production for this year and next, as reported by Bennett S. Chapple, Jr., assistant to the sales vice president, U.S. Steel Corp.

Steel industry plans call for an eventual expansion of production to 19,000,000 tons, an increase of 20% over 1941 production, which was 14,000,000 tons. In 1946, production of sheet and strip steel reached 16,000,000 tons. For 1947, the estimate is 17,000,000 tons, plus. This production, of course, is predicated on the assumption that there won't be any strikes or other work stoppages during the year.

Why They Buy. Why do housewives buy frozen foods? Here are some things that Howard Ketchum, industrial design consultant of New York City, found in a recent study. "Easy to get," said 37%, to give this point top rating; "regularity of quality" was second, with 30%; then "always fresh," 15%; flavor, clerk's advice, and variety in single brand, 5% each, and "the first brand the customer became familiar with," 3%. Packaging, display, and advertising were not included as factors.

48% of the women said they bought frozen foods at grocery or delicatessen stores; 16% at super-markets; 16% at frozen food specialty stores; 13% at department stores; and 7% at chicken or dairy stores.

Exports to England. Household electric refrigerators and ice cream cabinets are among some 108 new products which may be exported to England by American manufacturers under the British Token Import Plan. The plan allows U.S. manufacturers to re-establish trade on specified items banned during the war. To be eligible for participation under this plan manufacturers must have exported the products to Great Britain before the war, and values of annual shipments may not be in excess of 20% of the average annual shipment of each producer during the 1936-1938 period.

AMERICAN firms must allocate a definite share of their production to the foreign market even before domestic needs are filled or "someone else will have the business," R. W. Gifford, board chairman of Borg-Warner International Corp. and vice president of Norge, said in a recent address to members of the Chicago Federated Advertising Club.

Because "the pent-up demand in the world for our merchandise is beyond belief," Mr. Gifford predicted that America ultimately will reach an export volume of more than $14 billion annually. The new desire abroad for a higher standard of living indicates that our greatest foreign trade will lie in manufactured products, he added.

American advertising know-how can help to bring about mass consumption of American goods abroad as it has at home, Mr. Gifford said. "The American advertiser," he asserted, "must make foreign customers want his products and want them more than they would that of any foreign producer."

"Those who were doing business abroad before the war have just as definite an obligation to their foreign distributors as they have to their domestic distributors. Those who wish to develop these foreign markets for the first time cannot wait until the domestic market is supplied."

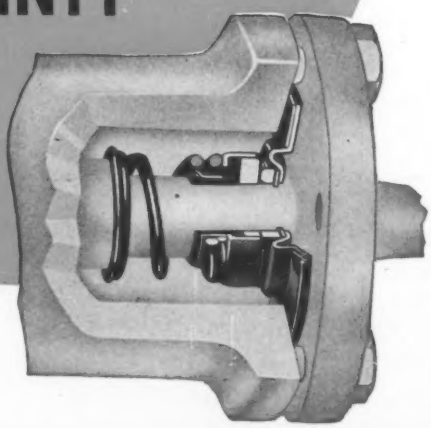
Mr. Gifford pointed out that England is withholding all luxuries from her own people in order to regain her trading position abroad through exports. He said that England "is now making trade agreements in all parts of the world while we talk about what we hope to do."

ROTARY SEAL

REPLACEMENT UNITS FOR REFRIGERATOR COMPRESSORS

Point the Way to

"SEALING *with* CERTAINTY"



BACKED BY THE MOST LIBERAL GUARANTEE ON THE MARKET!

Rotary Seals are available for over 752 models of refrigerator assemblies and are also used as original equipment by many compressor manufacturers.

ROTARY SEAL COMPANY

2020 North Larrabee St. Chicago 14, Ill.

CANADIAN OFFICE: 382 Victoria Ave., Montreal 6, Quebec, Canada

What's in a Name?

J. David Braverman knows the answer to that question, for from the 12,000 Addressograph plates which form his prospect file flows a steady stream of customers for his service firm

Mr. Braverman checks completed promotion pieces as his pretty secretary, Patricia McConnell, runs them through the addressing machine. Stencil plates are filed in boxes.

WHAT'S in a name? A potential customer, Mr. Serviceman, and don't you forget it!

And in the 12,000 carefully classified names preserved on Addressograph plates in the files of Official Service, J. David Braverman's enterprising refrigeration and air conditioning service organization in Philadelphia, rest 12,000 bonafied service prospects.

Those 12,000 names may sound like a mighty long prospect list for a service organization, but one glance at Mr. Braverman's Addressograph files is ample assurance that they are all there. Box after box of these address plates are neatly filed away on shelves in the Official Service office, and each box is carefully labeled with such classifications as Grocers, Restaurants, Meat Markets, Furriers, Delicatessens, Hotels, Poultry Dealers, Produce Dealers, Taprooms, and Hospitals.

Any prospect list, however, is only as good as the use that is made of it. Even 100,000 address plates would be utterly worthless if they were never used to send out pieces of direct mail promotion. So Mr. Braverman makes a regular practice of keeping his prospect list continually active by mailing out a minimum of 12 pieces of promotion a year to at least a segment of this huge list.

These promotion pieces may take the form of a typed or mimeographed letter on the company's letterhead (which is printed on attention-getting blue stationery), of specially prepared postal cards, or perhaps of just a sticker which the prospect can affix to his refrigeration equipment to provide him handy reference to the Official Service phone number in case of emergency.

Timing Technique

Generally the way this program works out is that certain sections or classifications of the complete list are selected as the target for a specific promotional drive. This selected list of prospects is then bombarded with a series of 12 promotion pieces of various types mailed at two-week intervals.

Promptness in answering inquiries resulting from these mailings is regarded by Mr. Braverman as a key factor in turning a prospect into a customer. "It's the first impression that really counts," he asserts, "and if you follow up an intelligently planned and attractively presented promotion piece with a prompt and courteous answer to all inquiries, you're well on your way to cultivating a fresh crop of customers."

When Mr. Braverman first conceived the idea of setting his entire prospect list up on Addressograph plates to facilitate his promotional mailings, he first purchased a supply of these metal stencil plates and the addressing machine itself.

Then he set about to augment and build up his prospect list. For this purpose he rented a city directory for six months, and set his secretary to culling from this all firms in the classifications in which he was interested. When the list was completed to his satisfaction, he then took it to the local post office, which zoned all the addresses without charge.

To keep a running check on the effectiveness of his direct mail program, Mr. Braverman makes a practice of checking all telephone and mail inquiries to determine whether these inquiries were prompted by the company's direct mail promotion or by its other forms of advertising.

THE *When Where Why How* of THERMOSTATIC EXPANSION VALVES

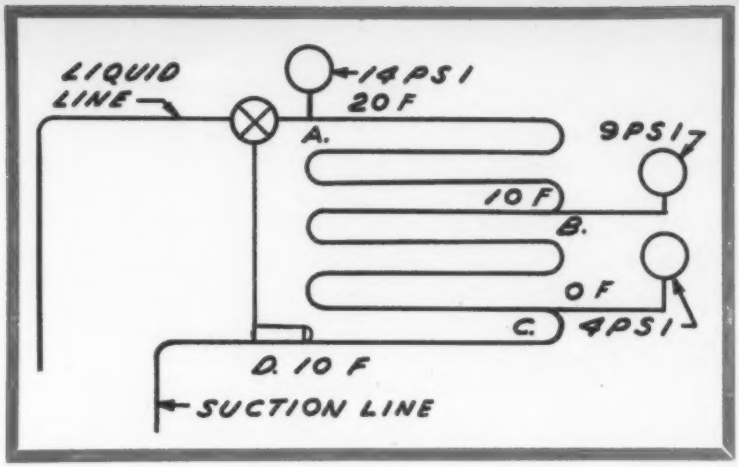


Fig. 4—Illustrating pressure drop through coil.

What function is served by external equalizers? What causes surging? If you read this, you'll know

By George H. Clark

IN GENERAL, thermostatic expansion valves may be factory set. The setting is usually stated in terms of degrees of superheat. If the valve is set for 10 degrees superheat, it means that if the bulb is held at a constant temperature of say 32 F, the valve will just close at a pressure representing a 22 F boiling point in the refrigerant.

For setting in the field, to get the maximum capacity out of the evaporator the adjusting screw or nut of the thermostatic valve may be set so as to cause refrigerant to flood back into the suction line steadily and then readjusted until the floodback is checked, making a small adjustment each time.

The actual superheat adjustment required for various applications may easily vary from plus 30 degrees to minus 10 degrees or more. In general, 5 to 10 degrees of superheat suits 95% or more of the applications.

For evaporators in which the drop in pressure through the evaporator is negligible, the superheat setting in general should be high when the capacity of the compressor is high with respect to the evaporator, and should be low when the compressor capacity is low with respect to evaporator capacity.

Water bath coils usually have a high capacity with respect to the compressor to which they are connected and a superheat of 3 to 5 degrees usually works out satisfactorily. Blower coils with high air velocity may have high capacity with respect to the compressor and work nicely with a 5 degree superheat. With the fan turned off, however, the capacity of the evaporator drops rapidly with respect to the compressor and a floodback will occur. The superheat setting would have to be readjusted to 20 degrees or more to prevent the floodback.

High superheat settings may be made quite high to obtain some semblance of two-temperature operation without auxiliary valves. An instance of this sort is the case of the ice cream cabinet and water bath coil in the soda fountain. In this instance, the thermostatic expansion valve attached to the ice cream sleeve should be set for a minimum of superheat, such as 5 degrees, while the thermostatic valve to the water bath coil may have a 35 degrees superheat setting, or even 40 degrees. Then with evaporation temperatures in both coils of –10 degrees, the control temperatures at the thermostatic bulbs of the two coils would be –5 F and 30 F respectively, which would allow low temperatures in the ice cream cabinet without freezing all the water in the water bath coil first.

Very low or negative superheat settings may be required for full coil operation where the evaporator has a high pressure drop through the coil.

Figure 4 shows a coil using methyl chloride as the refrigerant where the pressure leaving the valve is 14 psi, the pressure halfway through the coil is 9 psi, and the pressure at the outlet is 4 psi.

The valve in Figure 4 is set for maximum coil operation, as is shown by the fact that liquid is present through to point C as is indicated by the 0 F temperature at 4 psi. At point D the bulb temperature is 10 F, so that as far as the coil outlet is concerned the superheat is actually 10 degrees, but since the valve is regulating to feed liquid to the evaporator at 14 psi and 20 F, the actual valve setting is 10 minus 20 or -10 degrees of super heat. Such a condition is decidedly unhealthy, as at shutoff the pressures throughout the coil equalize and the liquid fed into the coil will warm up the thermostatic bulb, causing a further valve opening, and will flood liquid into the coil with no restraint.

The conditions indicated above led to the development of a thermostatic

expansion valve with an external equalizer. Figure 5 shows the valve of Figure 2 with a baffle plate between the refrigerant containing part of the valve body and the bellows or diaphragm which reacts to suction pressure. It will be noted that the pressure to which the valve bellows reacts is now that to which the equalizer connector is attached.

Figure 6 shows a hookup similar to that of Figure 4, except that the external equalizer is now tied into the suction line near the point at which the thermostatic valve is attached. In this case the pressures and temperatures throughout the coil are the same as shown in Figure 4, but the pressure to which the valve bellows now responds is 4 psi instead of 14, as in Figure 4. Now the valve is set for 10 degrees superheat at the point at which the equalizer and thermostatic bulb are connected. Operation of the coil is the same as before, except that when the machine shuts down, the valve will not close and tend to remain closed during the "off" period. Also, if changes in compressor capacity occurred, the coil would operate properly when using the equalizer connection, while with the hookup of Figure 4, the valve would have to be readjusted for every change of compressor capacity to get good operation during the "on" period.

Position Is Important

It will be noted that the equalizer connection connects into the suction line beyond the thermostatic bulb. This is to prevent the possibility of the bulb responding to liquid temperatures due to a slight leakage of liquid by the push rod openings in the baffle which would then go through the equalizer tube into the suction line.

To obtain somewhere near equal distribution of refrigerant to the various circuits of parallel circuit coils especially as used in air conditioning, a multiple part distributor is often used to feed low pressure liquid from the thermostatic valve outlet into the various circuits through comparatively small diameter tubes. The drop in pressure through the small distributor tubes may be several psi, so that an equalizer must be used in order to get away from negative superheat valve settings. First usage called for the equalizer connection to be connected into the suction manifold, but this was found to aggravate a surging condition, the cause of which is explained later.

The Problem of Surging

Conditions tending to open the thermostatic expansion valve include rising thermostatic bulb temperatures and lowering suction pressure, while closing occurs with lowering bulb temperature and rising suction pressure. Surging is a hunting condition which occurs when the valve opens and feeds liquid too fast. This causes a floodback, which lowers bulb temperature which closes the valves, and suction pressure goes down, but the suction line and bulb temperatures go down with it until the liquid in the suction line is all evaporated, when the bulb warms up. This, in conjunction with low suction pressure, causes the valve to open wide again and the cycle is repeated.

Some attempts have been made to cut surging to a minimum by using valves having small orifices so that the change in rate or refrigerant flow is less for a given change in suction pressure or bulb temperature.

When external equalizers are used and the external connection is made to the suction header of the coil, the surging condition is aggravated considerably. Figure 7 shows the reason.

Continued on page 52

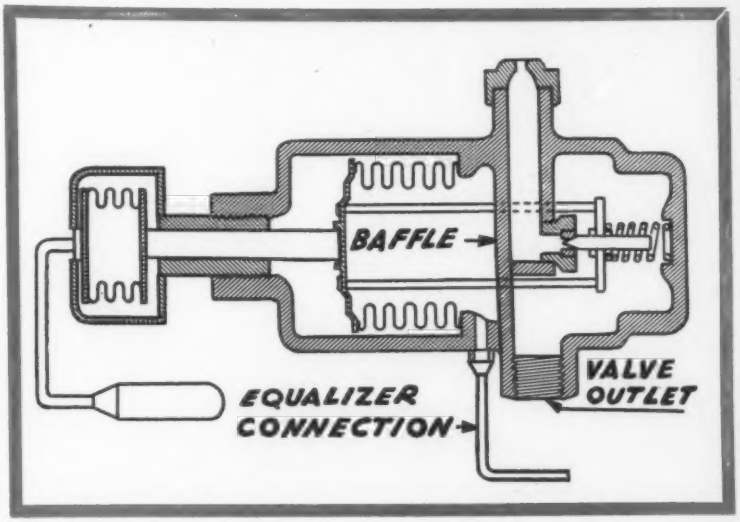
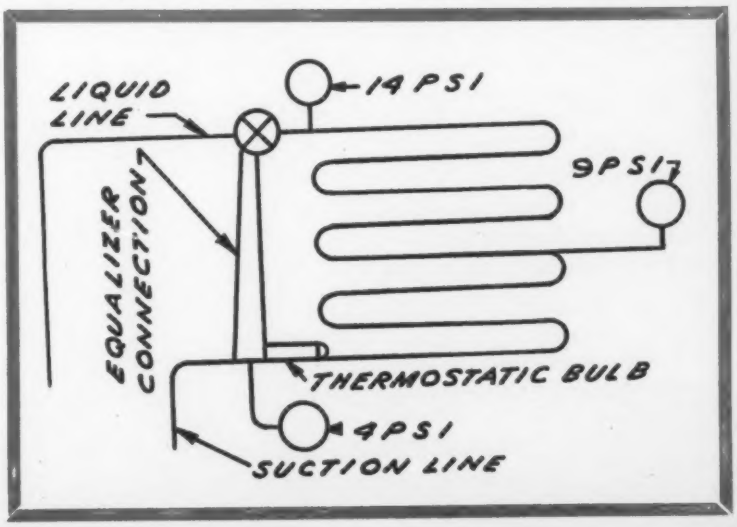


Fig. 5—Typical expansion valve showing equalizer connection.

Fig. 6—Hookup of Fig. 4 with equalizer tied into suction line.



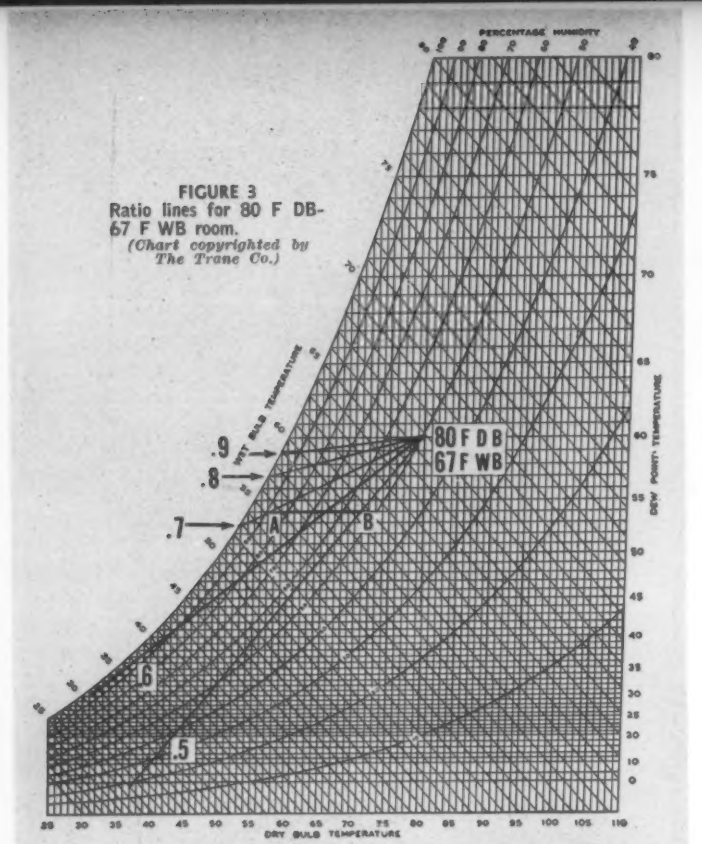


FIGURE 3
Ratio lines for 80 F DB-67 F WB room.
(Chart copyrighted by The Trane Co.)

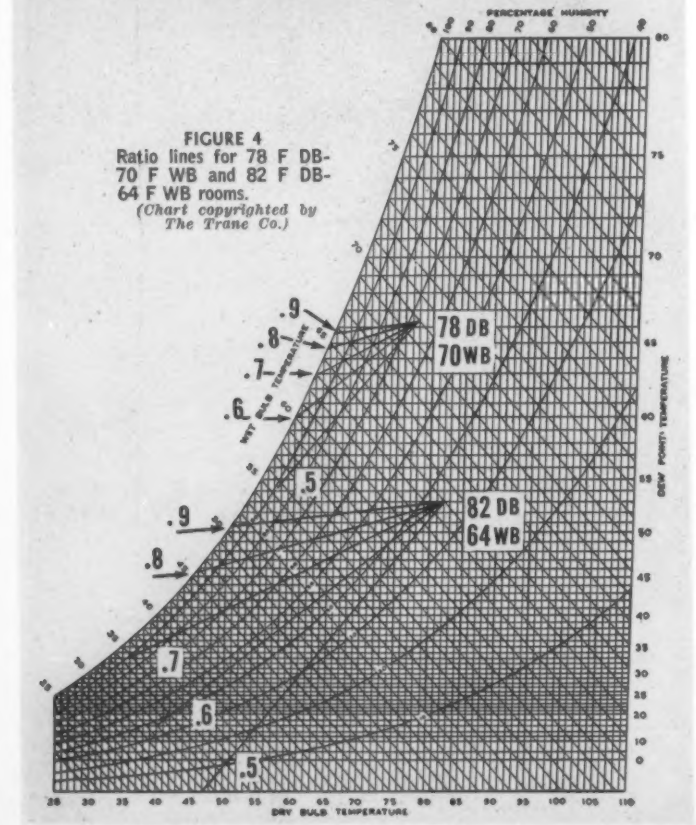


FIGURE 4
Ratio lines for 78 F DB-70 F WB and 82 F DB-64 F WB rooms.
(Chart copyrighted by The Trane Co.)

COOLING FOR

Part 6

SELECTION OF SUPPLY AIR TEMPERATURES

By S. C. Moncher
Regional Manager
Electric Power Equipment Co.

EARLY METHODS OF SELECTING SUPPLY AIR TEMPERATURES: We have seen in Part V that many combinations of dry- and wet-bulb temperature for the air supply are theoretically possible in order to maintain desired conditions of temperature and humidity within a room. It becomes necessary, therefore, to devise a method for determining the particular set of supply air temperatures which provide satisfactory operating conditions, and at the same time result in the maximum economy of installation and operating costs.

In the early years of comfort cooling, it was customary to set an arbitrary differential between the room dry-bulb temperature and the supply air dry-bulb temperature. In order to avoid drafts due to faulty air distribution, a temperature differential not exceeding 15 degrees was commonly used, except for rooms with low ceilings or in the case of installations where the outlet grilles discharged directly upon people. In the latter two instances, a lower temperature differential was designated.

In order to obtain the specified dry-bulb temperature of 15 F or less below room temperature for the supply air with the equipment available for simultaneous cooling and dehumidifying, such as air washers or surface coolers in the form of fin coils, however, it is frequently necessary to reheat the air after cooling and dehumidification. This is due to the fact that equipment available for simultaneous cooling and dehumidifying

HUMAN COMFORT

produces air with high relative humidities (90-100%). In order to remove sufficient moisture to offset the latent heat gain of the room, therefore, it is frequently initially necessary to cool the air moving through the apparatus to a temperature lower than 15 degrees below room temperature. Accordingly, the air must be reheated before entering the room of the specified temperature differential is not to be exceeded.

PRESENT-DAY METHODS OF SELECTING SUPPLY AIR TEMPERATURES: Reheating of air after cooling and dehumidification should be avoided whenever possible, for it involves additional equipment plus a greater load on the refrigerating plant resulting in higher installation and operating costs. With the present-day knowledge of air distribution which makes use of directional supply grilles, and ceiling outlets of the diffusing type which induce a secondary circulation by an aspiration effect, air for comfort cooling applications may safely be introduced into a room at a temperature as much as 30 degrees below room temperature. The method of supply air condition selection should be to choose that particular set of temperatures on the ratio line which can be produced directly by the equipment available to do the job. Of the equipment regularly available for simultaneous cooling and dehumidifying, air washers discharge air in an approximately saturated state, while surface cooling equipment can efficiently deliver air at a relative humidity of approximately 90%. Therefore, if we contemplate using an air washer, we should select conditions for the supply air as represented by the point of intersection of the ratio line with the saturation curve. If surface cooling equipment is to be used, however,

Continued on page 49

Welcome, Stranger!

BY SPECIALIZING in good service for owners of "orphan" commercial refrigeration equipment, the Perkins Radio and Refrigeration Service Co., Richmond, Va., has built up a valuable prospect list for later commercial refrigeration sales.

In business for 10 years, with service split equally between domestic refrigeration and commercial equipment in "small account" locations, owner E. W. Perkins has never turned down an "off-brand" refrigerator repair job.

"One grocer, who lost something like $700 in sales volume on frozen foods because he could not find a repair firm which would put his sharp freezer back in running order, told me that he had called 11 firms before we took over the job," Mr. Perkins said. "The refrigerator happened to be a model built in Canada, which was no more difficult to service than any standard American make. Nevertheless, the other firms the dealer had contacted would not touch it at any price—which is, I feel, a serious mistake. This same dealer has now signed up for two new quick-frozen foods boxes as soon as we can deliver them to him. That business we could not have obtained in any other way."

Mr. Perkins, himself, has trained his mechanics to tackle "orphan" equipment efficiently. Where outmoded ammonia equipment is found, the company has a stock of parts which will fit almost any type of compressor manufactured. Electric motors are substituted, coils replaced, and entire compressors rebuilt where necessary. Naturally, charges for such work are substantially higher than on standard refrigeration—but, so far, Mr. Perkins has experienced no complaint from customers on this score.

"Customers with the worst service problems make the best prospects for new equipment," Mr. Perkins said. "Working on these boxes gives us an opportunity to merchandise our service operations in a way the customer won't forget. They will respect the statements and offers we make simply because some of our competitors are 'not interested' in their orphan equipment. Most of these orphan refrigerator owners have been informed that they were silly to buy the refrigerator in the first place, and that they are 'stuck with it!' We never adopt that attitude—instead, we tell the owner that he is lucky to have refrigeration of any type, and that we can keep it operating for him until the time comes to replace it. Telling the customer these facts opens up the opportunity to suggest a new unit, custom-designed for the job, later on.

Service man Harold Hill stands beside the truck which he designed and built to facilitate his mobile service operations.

Rear view of the truck shows how the center section of the body is left open to provide a place for hauling heavy equipment.

Service On Wheels

HOW one veteran made his post-war dream come true is shown in the pictures on this page. While serving with the armed forces in England, Harold L. Hill of Janesville, Wis., began thinking about developing some sort of a service truck to aid him in his refrigeration service work once the war was over.

He put these ideas into more concrete form by drawing up a sketch of just such a truck. This sketch he carried with him until he returned home once more and could start work on the truck itself.

In finished form, this truck represents one serviceman's idea as to how service equipment can best be taken to the job, rather than bringing the job to the equipment. But let Mr. Hill describe this truck in his own words.

"I bought the Dodge truck without the rear fenders, and built the cabinets out as far as the fenders originally came. That is, I just stayed in line with the running board, which gave me about 12 inches of depth inside the cabinets.

How It Was Done

"I used 16-gauge black sheet iron for the job. First I put some good hardwood stakes in the holes provided in every pick-up body, and then built the back of the cabinets up on them. Then I just built on from there. The cabinets are bolted right to the pick-up body on the sides and on each end, and the whole assemblage is really solid.

"I constructed the sides so that they came up just half-way on the rear window, permitting good vision for backing and maneuvering the truck. The locks on the cabinets are like those on frozen food lockers, and all open with a master key.

"I covered the shelves and the lip of the body with thin sheets of sponge rubber that I found at my local junk yard. It makes a good cushion for parts to ride on. They stay in place better, and do not get scratched and marred.

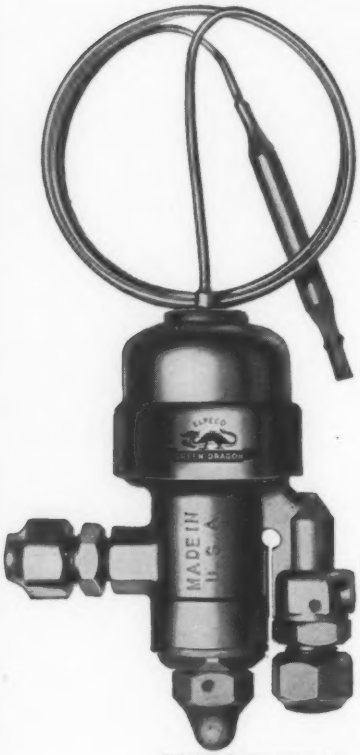
"I located material wherever I thought it would be handiest. I placed my tools and working equipment on the left side, so that I just step out of the truck, open the first cabinet, and grab my tray of tools which sets on top of a chest of drawers containing fittings and miscellaneous spare parts.

Continued on page 61

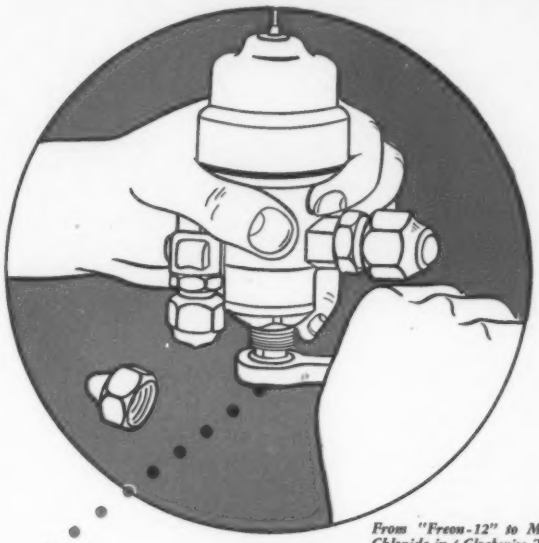
These two views of opposite sides of the truck show the clever arrangement of compartments for the storing of tools and supplies.

THIS ELPECO THERMOTRON

CONTROLS EITHER "FREON-12" OR METHYL CHLORIDE



MODEL "AT" Adjustable Thermostatic Flow Control



From "Freon-12" to Methyl Chloride in 4 Clockwise Turns

INCREASES VALVE USABILITY *100%*

● When you make a service call involving control valves—four Elpeco THERMOTRONS will cover your needs. This means you can increase your valve usability 100% with THERMOTRONS. Also, less investment is needed.

The reason is in the design of the Model AT adjustable thermostatic Flow Control. Four clockwise turns of the adjusting stem changes a "Freon-12" valve to one for methyl chloride. The adjustment is simple and always the same. Installation is quicker because you have no parts to purchase or replace to get the proper capacity.

The table gives the capacity of the adjustable THERMOTRONS for "Freon-12" and methyl chloride. It shows how easily they can be selected.

Your selected Elpeco wholesaler has Thermotrons in stock to help you with your control valve needs. Save time and money by standardizing on the Green Dragon line.

THERMOTRON CAPACITIES

TYPE	LIQUID TEMPERATURE THERMOTRON OUTLET DEGREES FAHR.	REFRIGERATION CAPACITY—TONS "FREON-12" Liquid Temperature THERMOTRON Inlet ° F. 80°	100°	120°	METHYL CHLORIDE Liquid Temperature THERMOTRON Inlet ° F. 80°	100°	120°
AT-25*	−10°	.10	.11	.12	.20	.22	.24
	5°	.13	.15	.16	.26	.30	.32
	20°	.17	.19	.21	.34	.38	.42
	40°	.22	.25	.27	.44	.50	.54
AT-50*	−10°	.20	.23	.25	.40	.46	.50
	5°	.27	.30	.33	.54	.60	.66
	20°	.33	.37	.40	.66	.74	.80
	40°	.45	.50	.55	.90	1.0	1.1
AT-100*	−10°	.40	.45	.49	.80	.90	.98
	5°	.53	.60	.66	1.0	1.2	1.3
	20°	.67	.75	.82	1.3	1.5	1.6
	40°	.90	1.0	1.1	1.8	2.0	2.2
AT-200**	−10°	.83	.93	1.0	1.6	1.8	2.0
	5°	1.1	1.2	1.3	2.2	2.4	2.6
	20°	1.3	1.5	1.6	2.6	3.0	3.2
	40°	1.8	2.0	2.2	3.6	4.0	4.4

* Based on 4° Super-heat change from closed position to fully open.

** Based on 6° Super-heat change from closed position to fully open. Inlet liquid at saturation temperature and vapor-free.

ELPECO GREEN DRAGON

ELECTRIC POWER EQUIPMENT CORP., 412 North 18th St., Philadelphia 30, Pa.

THE GREEN DRAGO LINE

THERMOTRO
—flow control

UNITRON
—unit cooler

CUBETRON
—ice cube make

CAPACITRON
—capacity booste

EXOTRON
—condenser

CONDENSOTRO
—condensing unit

THERMEK
—heat transfer surfa

WHERE THE *Cash* COMES IN

It's just as important to know where the money comes from as where it goes. Here's how you, Mr. Contractor, can find out

By Guy M. Carson
Comptroller, Tallman, Robbins & Co.

THIS article deals principally with "cash receipts". The discussions and illustrations apply equally to the large or small contractor. The problems are the same. The only difference is size. Proper procedure is just as important to one as to the other.

If you have your own office staff, bookkeeper or accountant, the method of accounting suggested in these articles is of vital importance to you.

If you have not yet arrived at the place where you have an office staff, you must then either keep your own books or have some member of the family keep them. One other alternative is to have a regular bookkeeper or accountant keep them "part time". Many contractors have found it most satisfactory to get the services of a "part time" bookkeeper or accountant. Such a person may be employed elsewhere and do your work evenings and Saturdays. There are also accountants who make such "part time" jobs a specialty. Any arrangement whereby a competent and experienced person keeps your books has certain advantages. We recommend it. It's not expensive, and it's a good set-up.

However, if you plan to do the work yourself or have a member of the family do it, that's o.k. It will make a business man out of some member of the family. These articles have typical entries and illustrations, and will, we hope, be instructive and helpful to the layman keeping a comprehensive set of books.

These articles are not intended, however, to teach the principles of bookkeeping; but to adapt a certain style of bookkeeping to the contractor's needs.

The method of keeping "cash receipts" and other records recommended herewith:

1. Is simple—yet complete.
2. Is easily kept in balance.
3. Shows how much was received from "contracting" operations.
4. Shows to what jobs these receipts apply.
5. Shows amount of income derived from retail sales or other special income.
6. Gives figures needed for figuring profit.
7. Gives figures needed for income tax.

One of the nice things about it is that you may have this information with or without a general ledger. If you are a large operator and have a bookkeeper or accounting department, you will probably want to keep a general ledger. But if you prefer, the totals of this "cash receipts" record may be carried forward until the end of the year. The footings at all times will tell you what your receipts have been and from what source.

The old style method of keeping cash receipts was to enter everything in one column and then post to a lot of individual accounts. That was cumbersome, took time, and presented too many opportunities to make errors.

The method illustrated herewith provides special columns for special types of receipts. There is one column for "accounts receivable"; another column is available for "retail sales", if you have them. Any special type of income may be easily kept separate by giving it a special column. Some contractors head up one of the columns "sales tax" and keep all such receipts therein. Once the columns are set up for special income, nothing else should be kept in that column.

In order to keep an accurate record,

Continued on page 62

The Cash Receipts form illustrated here (and referred to in the article as Exhibit 1) has special columns for Accounts Receivable, Retail Sales, Sales Tax and other special types of income. It may be kept with or without a general ledger.

CASH RECEIPTS

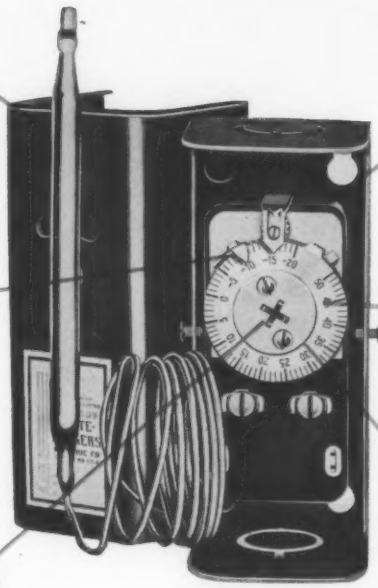
MONTH OF April 194-

DATE 194-	RECEIVED FROM	1 AMOUNT RECEIVED	2 DISCOUNT ALLOWED	3 ACCTS. RECEIVABLE JOB #	3 ACCTS. RECEIVABLE AMOUNT	✓	4 Retail Sales	5 Sales Tax	6 OTHER RECEIPTS EXPLANATION	✓	6 OTHER RECEIPTS AMOUNT	MEMO BANK DEPOSITS
Apr 10	B. L. Smith	50000		9	50000	✓						
12	M. + L. Realty Co.	490000	10000	8	500000	✓						
15	John Doe	64000		10	64000	✓						
15	H. + R. Salvage	360							Sale of Scrap		360	
16	1st Natl Bank	750000							Loan - 60 day		750000	
16	Sales - Store	20400					20000	400				
17	Sales - Store	61200					60000	1200				

Look for these features in a temperature control!

MOUNT AT ANY ANGLE OR POSITION

FULLY ENCLOSED STURDY SWITCH



DIFFERENTIAL CONSTANT THROUGHOUT RANGE

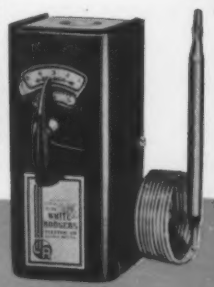
DIALS ACCURATELY CALIBRATED IN DEGREES FAHRENHEIT

SETTINGS EASILY AND QUICKLY MADE WITH SCREW-DRIVER

ACCURATE AT ANY TEMPERATURE IN DIAL RANGE

White-Rodgers Hydraulic-Action Temperature Controls offer you all these advantages and more! Accepted as standard by leading manufacturers of refrigerating and air-conditioning equipment, they offer you benefits you can't afford to overlook.

Have you received your copy of the new White-Rodgers Refrigeration Control Catalog? Send for your copy today.



WHITE-RODGERS ELECTRIC CO.

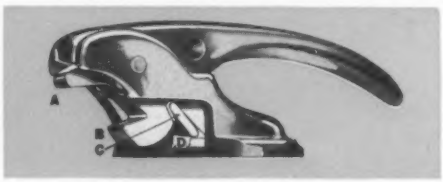
ST. LOUIS 6, MISSOURI

Controls for Refrigeration • Heating • Air Conditioning

When they TRIP they GRIP

When you specify a Grand Rapids Brass Company lock . . . no matter what the size or what the job . . . you provide the most dependable, most positive automatic trip lock available. And you reap the rewards of OUR superior design and engineering . . . in the form of lifelong customer satisfaction with YOUR product. You can always trust your good name to the performance of Grand Rapids Brass Company locks and hinges.

IT'S THE PRINCIPLE OF THE THING



Whether it's for a big walk-in cooler door or a small display cabinet, this exclusive locking principle combines smooth operation with cushioned, shockless endurance. When the trigger (a) trips on the strike, the locking jaw (b) takes hold like a bulldog . . . and never relaxes its grip. See our catalog for specifications, range of offsets, and alternative strikes.

by America's Quality Manufacturers of Commercial Refrigeration Hardware

Grand Rapids Brass Company

Makers of Dependable Refrigerator Hardware for over 40 Years

Grand Rapids 1, Michigan

WHAT'S NEW in Air Conditioning

ON THIS and several pages following are presented thumbnail reviews of products shown at the Seventh International Heating & Ventilating Exposition which are of special interest to air conditioning and refrigeration contractors and dealers. If you would like additional information on any of the products listed, let us know and we'll see that you get it. The Editors.

Acme Industries, Inc., featured a newly designed evaporative condenser said to be readily accessible and to cut service problems to a minimum, along with the "Dry-Ex" water cooler and a line of shell and coil heat exchangers.

Aerofin Corp. showed its "Non-Freeze" steam coil for temperature control.

Air Control Products, Inc. displayed registers and grilles, floor registers and faces, and ventilators.

Air Devices, Inc. displayed various models of "Agitair" air filters, air diffusers, and wind-actuated exhausters.

Air-Maze Corp. exhibited various types of its air filter panels for air conditioning and industrial applications use. The filters are all-metal and cleanable. Holding frames for the air filter panels and housing assemblies also were shown.

Eye-catcher in the booth occupied by **Airtemp Division, Chrysler Corp.,** was a new ¾-hp window cooler on which specifications have not yet been released. Also on display was a ¾-hp sealed radial condensing unit, typical of the company's eight-model "all-purpose" line ranging from ⅙ to 2 hp; a 10-hp radial unit for central system cooling; and the Model 3-RSCD combination year-around air conditioner for residential use.

Representative models of its line of filters electronic and otherwise, were shown by **American Air Filter Co., Inc.**

American Flange & Mfg. Co., Inc. displayed samples and suggested applications of its "Ferro-Therm" steel insulation material, with particular emphasis on heating and air conditioning usage.

American Thermal Industries, Inc., displayed its 5 and 7½-ton packaged commercial air conditioning systems.

Anemostat Corp. of America displayed typical units of its line of air diffusers, ceiling and wall types, as well as units made in combination with lighting fixtures. Several of the units were in operation.

"Can't you charge off all these aspirins as a business expense?"

Automatic Products Co. showed its Model 215 thermostatic expansion valve; four models of solenoid refrigerant valves; and its "TrapDri" combination drier, strainer, and filter. Automatic heat regulators also were included in the display.

Bacharach Industrial Instrument Co. featured its "Tempscribe" recorder for air temperature and electrical operation, which has a dealer's price of $27 and is said to incorporate several exclusive utility and convenience features. For heating contractors, the company displayed a "Fyrite" CO_2 indicator and a combustion-testing service kit.

Barber-Colman Co. displayed models of its automatic controls, air distribution products and small motors. The controls are for either heating or cooling application in residential and commercial-industrial use. Air distribution devices included Uni-Flo grilles and registers, Venturi-Flo ceiling outlets.

Bard Mfg. Co., Bryan, Ohio, had on display a model of its 5-ton self-contained store air conditioning unit.

Buffalo Forge Co. exhibited an evaporative water cooler and a "PCGW" wet glass cell air washer. Along with these units, it showed "LL" and axial-flow fans and industrial exhausters.

Packed with product displays was the **Carrier Corp.** exhibit, including the Model 50T6 store "Weathermaker"; three models of room air conditioners; a new humidifier for household use; typical segments of the conduit Weathermaster system; and representative models of the company's line of refrigerating compressors and condensing units.

A "Multitherm" unit for zone control air conditioning topped the dis-

Continued on page 64

Results of the direct mail campaign are carefully analyzed by W. J. Heggie (right), president, Miss L. M. Patton, assistant treasurer, and H. G. McCullough, vice president, of the Fretz organization.

Miss Patton, who had gained a background for direct mail work through special courses at the University of Pennsylvania, is credited by her employers with much of the success for the company's program. She was of invaluable help, Mr. Heggie explains, in preparing the copy and layouts for the cards and in analyzing the results obtained.

Each of the three double postcards mailed out was printed on a different color stock, the first card on white, the second on buff, and the third on light green. This was done not only for attention value when the cards reached the prospects, but also so that the Fretz company could more readily identify the returns.

This latter point proved to be very important, as the company was still receiving return cards from the first

IT'S IN THE

Are you looking for a new promotional slant to use in plugging sales of packaged air conditioning equipment? Direct mail may be the answer. It was for this dealer

DIRECT mail promotion, properly employed, can be an exceedingly effective—and economical—medium for selling packaged air conditioning equipment.

This fact was pretty well established last year by S. S. Fretz, Jr., Inc., Chrysler Airtemp dealer in Philadelphia, when this enterprising firm sold a total of 97 packaged air conditioners as a direct result of a three-postcard mailing sent to a selected list of commercial and industrial prospects.

In addition to those 97 sales directly attributable to this promotion, another 40 or 50 sales were classified as indirect returns from this direct mail program.

Total printing costs for the entire promotional venture amounted to only $761.49, or a mere $7.85 for each unit actually sold as a result of the promotion.

It was facts like these which convinced W. J. Heggie, president of the Fretz organization, and H. G. McCullough, vice president, of the success of the entire campaign, after they had analyzed the final results with the help of Miss Lenore M. Patton, assistant treasurer.

and second mailings for some time after the third mailing had been completed. This indicates that these "silent salesmen" were still doing a solid selling job months after they were mailed.

The message side of each card carried hard-hitting selling copy, varied enough so that each card bore a somewhat different sales appeal, yet

President Heggie discusses results of the postcard campaign with members of the retail sales force who aided in the plan.

with enough similarity so that the thread of the unifying sales theme was not broken.

The reply portion of the double postcards of course carried the address of S. S. Fretz, Jr., Inc., on the front side, while the reverse side of all these cards bore this message:

"Without obligation, kindly send me information regarding Chrysler Airtemp Packaged Air Conditioning for the following application: Offices....., Tap Room....., Specialty Shop....., Factory....., Store....., Beauty Shop....., Bowling Alley....., or....."

Space also was provided for the prospect's name, address, and phone number.

The first card in the series was mailed from Nov. 1, 1945 to Jan. 28, 1946. Returns from this mailing

CARDS

of 14,624 cards were 342, or 2.3%.

The second card was mailed from Jan. 28 to April 9. From this mailing there were 353 cards sent back by prospects, or a return of 3%.

The third card, mailed between April 13 and June 10, to 13,292 prospects, drew 265 replies, a 2% return.

No highly specialized mailing list was used. The Fretz company sent cards to all their former commercial and industrial customers and to members of trade associations to which they belong. By far the greatest number of cards were sent on a "buckshot" basis to names taken from classified section of the telephone directory, based principally on a study of the classifications of previous installations the company had made and on the results of an open discussion with the firm's sales force.

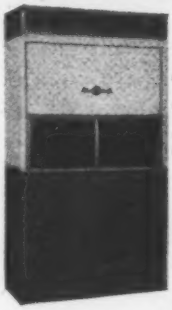
Responsibility for addressing the cards rested with the salesmen themselves, and the work was divided so that each man addressed approximately the same number of cards.

The first mailing was more or less of a "feeler" to see where the most active market for this type of equipment lay. After an analysis of re-

Continued on page 51

These **CHRYSLER AIRTEMP**

"PACKAGED" AIR CONDITIONERS



Are Available NOW!

We have just received our first post war shipment of Chrysler Airtemp "Packaged" Air Conditioners in sizes to suit your cooling needs.

NOW IS THE TIME TO BUY

Because additional shipments from factory production are limited, the supply will be less than the demand. Many who put off buying until Spring will be unable to obtain equipment.

Be Ready for That First Hot Spell Next Spring!

MAIL THE ATTACHED CARD TODAY!

First in the series of three postcards mailed out, this card was printed on white stock and announced the availability of packaged coolers.

These **CHRYSLER AIRTEMP**

"PACKAGED" AIR CONDITIONERS

Are Being Purchased As Fast As They Arrive!

We are making installations right now in Philadelphia shops, stores, restaurants, offices, and establishments similar to your own. A flick of a switch and they will be operating THIS SUMMER for the benefit of their owners' business!

GIVE YOUR BUSINESS A BETTER CHANCE!

It is not too late to arrange for an estimate of your cooling requirements. Remember, there is no obligation. Because the supply is limited, however, it must be first come, first served.

Look Forward to a Comfortable Summer for Yourself and Your Customers by Preparing for it Now!

MAIL THE ATTACHED CARD WITHOUT FURTHER DELAY!

The second card sent to prospects stressed the advantages of packaged cooling and urged them to safeguard customers against summer heat.

YOU WOULDN'T THINK OF HAVING AN **UNHEATED** STORE IN WINTER . . . WOULD YOU?

THE TIME HAS COME WHEN IT IS JUST AS ABSURD TO HAVE AN **UNCOOLED** ONE IN SUMMER!

YOU MUST HURRY!

If you expect to meet competition this summer, act now, for only a limited quantity of CHRYSLER AIRTEMP "PACKAGED" AIR CONDITIONERS ARE LEFT.

PUT YOURSELF IN YOUR CUSTOMERS' PLACE ON A HOT AND HUMID PHILADELPHIA DAY — WOULDN'T YOU LOOK FOR THAT "AIR CONDITIONED" SIGN, TOO?

For an estimate that incurs no obligation and puts you in line for delivery this Spring,

MAIL THE ATTACHED CARD TODAY!

Card No. 3 was printed on green stock. It stressed the need for haste and offered a free estimate. Punch lines on all cards were printed in red.

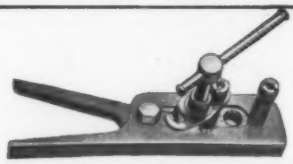
For over a quarter century Penn has maintained exact standards for 'Superior' tubing.

If you want to build a Superior product or to give Superior service, you should use the best materials obtainable. In copper tubing 'Superior' is your best bet for 'Superior' is better four ways - - Dry - - Clean & Bright - - Seamless and Easy Bending.

Since there is no better tube, for no tube surpasses 'Superior', we still can't meet the demand. Plan now to use 'Superior' for all your needs and write today for full particulars and a new colorful circular entitled "After the Pressure is Off".

PENN TUBING IS "SUPERIOR"

SIX TOOLS IN ONE AND WORKS LIKE "SIXTY"



The Papco #400 is a compact flaring tool that holds six sizes of tube and gives you a quicker, easier and better flare. Send for Bulletin.

GET YOURS NOW

PENN BRASS & COPPER CO.

ERIE, PENNSYLVANIA • *Phone 35-111*

REFRIGERATION INDUSTRY *News*

FROZEN FOOD SHOW IN SAN FRANCISCO MARCH 19-21

Center of interest for all those associated with the frozen food industry will shift westward this month to the Frozen Food Industry Exposition, to be held March 19 to 21 in the Civic Auditorium, San Francisco. The exposition is sponsored by the National Association of Frozen Food Packers, which will hold its annual convention concurrently with the show.

Advance indications are that attendance at the exposition will be nation-wide and considerably higher than for any previous gathering in this field. Latest list of exhibitors shows 92 firms displaying their products at the affair. Makers of low temperature refrigerators, insulation, truck refrigeration equipment, and locker plant equipment are well represented among the exhibitors.

Following is the most recent available list of exhibitors:

Acme Steel Co., Chicago; American Bitumuls Co., San Francisco; American Can Co., New York; Amsco Packaging Machinery, Inc., Long Island City, N. Y.; Associated Seed Growers, Inc., New Haven, Conn.; Atlas-Pacific Engineering Distributors, Inc., Oakland, Calif.; Authorized Cabinet Co., Grand Haven, Mich.; Basic Vegetable Products, Inc., San Francisco; Beall Pipe & Tank Corp., Portland, Ore.; Besler Corp., Emeryville, Calif.; Better Packages, Inc., Shelton, Conn.; Peter D. Bowley & Associates, San Francisco; The Brown Instrument Co. Philadelphia; California Spray Chemical Co., Richmond, Calif.; Chapman Refrigerator Sales, Corvallis, Ore.; Chisholm-Ryder Co., Inc., Niagara Falls, N. Y.

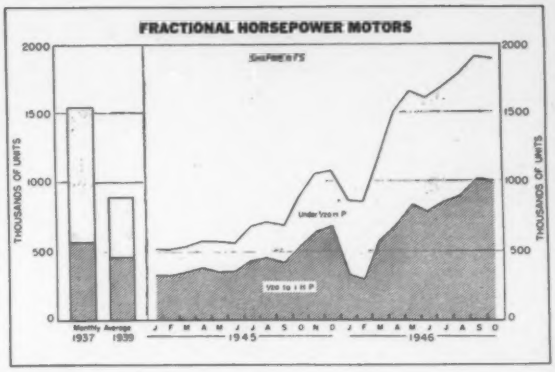
Consolidated Electric Products Co., San Francisco; Consolidated Freightways, Inc., Portland, Ore.; Cyclotherm Corp., New York; The Dobeckmun Co., Cleveland; Dole Refrigerating Co., Chicago; Dorsey Trailers, Elba, Ala.; Doughboy Industries, Inc., New Richmond, Wis.; E. I. duPont deNemours & Co., Inc., Wilmington, Del.; Empire Box Co., Garfield, N. J.; The Exact Weight Scale Co., Columbus, Ohio; J. L. Ferguson Co., Joliet, Ill.; Fibreboard Products, Inc., San Francisco; Ben Fish & Sons, Santa Barbara, Calif.; Fleishhacker Paper Box Co., San Francisco; Food Freezing, New York.

Food Industry, New York; Food Machinery Corp., San Jose, Calif.; Fraser & Johnston Co., San Francisco; Frez-O-Mat Sales Corp., Chicago; Frosted Food Field, New York; Frozen Food Industry, New York; Fruehauf Trailer Co., Detroit; General Electric Co., Bloomfield, N. J.; Globe Slicing Machine Co., San Francisco; Good Packaging, San Francisco; The Goodyear Tire & Rubber Co., Akron, Ohio; Hoffman-LaRoche, Inc., Nutley, N. J.; The Hopp Press, Inc., New York; Hussman Refrigeration, Inc., St. Louis; Kent Engineering Co., Los Angeles; King Sales & Engineering Co., San Francisco.

Lawrence Warehouse Co., San Francisco; Life, New York; Marathon Corp., Menasha, Wis.; Meese Inc., Madison, Ind.; Merck & Co., Inc., Rahway, N. J.; Miller Wrapping & Sealing Machine Co., Chicago; Milprint, Inc., Milwaukee; National Food Brokers Association, Washington, D. C.; National Ice & Cold Storage Co. of Calif., San Francisco; Nolan Corp., Rome, N. Y.; Northrop, King & Co., Minneapolis; The Pacific Lumber Co., San Francisco; Pack-Rite Machines, Milwaukee; Package Machinery Co., Springfield, Mass.; Chas. Pfizer & Co., Inc., New York.

Quick Frozen Foods, New York; The Rapids-Standard Co., Inc., Grand Rapids, Mich.; Refrigeration Corp. of America, New York; Reynolds Metal Co., Richmond, Va.; Rogers Bros. Seed Co. Chicago; Rossotti West Coast Lithographing Corp., San Francisco; Salem Engineering Co., Salem, Ohio; Shellmar Products Co., Mt. Vernon, Ohio; Simplex Wrapping Machine Co., Oakland, Calif; Spir-O-Freez Co., Staten Island, N. Y.; Standard Oil Co. of Calif., San Francisco; Stecher-Traung Lithographing Corp., San Francisco; Stokes & Smith Co., Philadelphia; Super-Ice, Inc., Berkeley, Calif.; Sylvania Div., American Viscose Corp., New York.

Toledo Scale Co., Toledo, Ohio; Tompkins Label Service, New York; U. S. Dept. of Interior, Fish & Wildlife Service, Washington, D. C.; U. S. Thermo Control Co., Minneapolis; Waldorf Paper Products Co., St. Paul; Wallace & Tiernan Co., Inc., Belleville, N. J.; Washburn-Wilson Seed Co., Moscow, Idaho; Weber Showcase & Fixture Co., Inc., Los Angeles; Western Canner & Packer, San Francisco; Western Fiberglas Supply Ltd., San Francisco; Western Waxed Paper Co., Oakland, Calif.; Wood Conversion Co. St. Paul; F. H. Woodruff & Sons, Inc., Sacramento; York Corp., York, Pa.; Zellerbach Paper Co., San Francisco.



LOCKER SUPPLIERS HAVE NEW NAME

By unanimous action of the directors, "Frozen Food Locker Institute, Inc." has been chosen as the new name of the Frozen Food Locker Manufacturers and Suppliers Association. Broadened scope of activities planned for 1947 is one of the factors influencing the name change, according to R. R. Farquhar, executive director.

REWA MEETING SET FOR MARCH 20-22

Twelfth annual meeting of the Refrigeration Equipment Wholesalers Association will be held March 20 through 22 at the Edgewater Beach hotel in Chicago.

First day of the sessions will be devoted to meetings of standing committees and regional groups, culminating with a Past President's Party, an innovation in the way of social activities for the group.

Annual banquet and dance will be held Friday evening, and final business session will be wound up on Saturday.

All business sessions will be closed meetings, but members of REMA and others with whom the association members are associated are invited to join in the social functions.

* * *

MOTOR SHORTAGE DUE TO CONTINUE

The fractional horsepower motor situation, still critical a year and a half after the war's end, was depicted graphically by the Civilian Production Administration in a chart which accompanied that agency's "Report to the President." This chart is reproduced herewith.

Shipments increased from 700,000 in August 1945 to 1,900,000 in October 1946, an increase of 171 per cent and 25 per cent above the best prewar year. But the October 1946 backlog reached an all-time high of 40 million motors.

It is estimated that until mid-1947, when planned new capacity of silicon sheet steel may become available, the ceiling on fractional horsepower a.c. motors will be about 2 million motors per month.

FISKE RESIGNS AS ASRE SECRETARY

David L. Fiske has resigned as national secretary of American Society of Refrigerating Engineers. It is understood he will do consulting engineering work in refrigeration and air conditioning. His resignation was effective as of Jan. 15, and a successor will be named by the A.S.R.E. Council.

OHIO RSES MEN FORM OWN GROUP

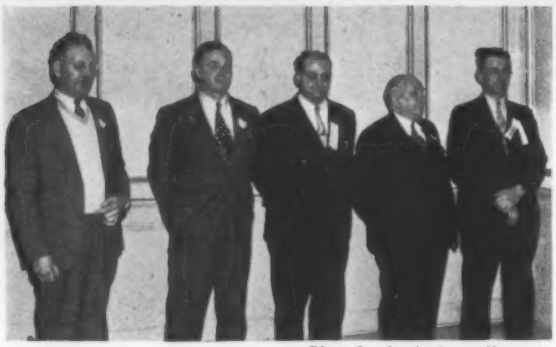


Photo by Austin Jones, Kerotest

Officers of the Buckeye State association of R.S.E.S., left to right: Carl Deiter, Youngstown, treasurer; Russ Wagner, Dayton, secretary; J. R. Nichols, Medina, president; A. M. Fenwick, Cleveland, educational chairman; Forrest Poole, Portsmouth, sergeant-at-arms.

• • •

Formal organization of the Buckeye State Association of Refrigeration Service Engineers Society was completed at a two-day meeting in the Seneca Hotel, Columbus, Ohio, Jan. 25 and 26. About 180 persons attended the meeting, arrangements for which were under the direction of Earl Yockey, Columbus, acting president of the association and a director of national R.S.E.S.

Officers for the coming year, elected at the meeting, are: Oren Nichols, Jr., Medina, president; Paul Sizer, Toledo, vice president; Russ Wagner, Dayton, secretary; Carl Deiter, Youngstown, treasurer; Forrest Poole, Portsmouth, sergeant-at-arms; A. M. Fenwick, Cleveland, educational chairman.

GRUBER OPENS NEW BRANCH IN NEWARK

Abe Gruber & Co., refrigeration equipment wholesaler with headqquarters in Elizabeth, N. J., has opened a branch in Newark. Donald Whitman will manage the branch and D. W. Mayr will be sales manager. Paul Schorr is manager and William Jeffrey sales manager of the Elizabeth store.

NEW LOCKER PLANT

The Wayne County Frozen Food Locker Plant has been opened at Waynesboro, Miss., under management of Sam W. Cochran.

NOMA FREEZERS REDUCED $51

A reduction of $51 on both Estate and Frigid-Freeze home freezer models 746 and 1046 has been announced by John M. Bess, executive vice president of Noma Electric Corp. appliance divisions, which include Estate-Heatrola and Refrigeration Corp. of America. Reduction on the model 746 is from $450 to $399 and on the 1046 from $650 to $599. The first is a 12 cu. ft. and the second a 20 cu. ft. freezer.

SANITARY SLASHES FREEZER PRICES $50

A $50 slash in the price of its farm freezers has been announced by Sanitary Refrigerator Co. of Fond du Lac, Wis.

The pre-war price of the "Quicfrez" was $395. There have been two price raises since the war. The new reduction brings the price back almost to within 10% of the pre-war level.

T. C. McKEE DIES; INDUSTRY VETERAN

Thos. C. McKee, president of Midwest Engineering & Equipment Co., Chicago contracting firm, died suddenly Dec. 30, 1946.

Mr. McKee was a veteran in the refrigeration field. In 1901 he joined Carbondale Machine Co. He joined the Midwest organization in 1922.

His son, Thos. C. McKee, Jr., is connected with the Chicago office of Detroit Lubricator Co.

HERE'S FIRST WORD ON 1948 SHOW

The Fifth All-Industry Refrigeration and Air Conditioning Exposition will be held in the Cleveland Public Auditorium on January 26, 27, 28 and 29, 1948. Under a new policy set by Refrigeration Equipment Manufacturers Association, which will be the sole sponsor of the 1948 Show, the exposition will be scheduled every two years.

The Sixth All-Industry Show already has been scheduled for January, 1950, with REMA as sponsor.

A two-year Show policy, it is felt, will keep the exposition from becoming "just another show"—and January was chosen as the most suitable month.

For the 1948 Show, REMA will engage the same four exhibition halls as were used for the 1946 exposition. F. J. Hood has been selected as chairman of the Fifth All-Industry Show, and REMA officials already are taking steps to assure adequate housing and hotel facilities for Show visitors.

In line with previously established policy, REMA is using part of its proceeds from the 1946 Show to continue sponsorship of its public relations activity. A portion also will be used to assist RSES in its educational campaign.

CANADIAN R.S.E.S. TOPICS LISTED

Subjects for technical sessions of the Interprovincial Association of Refrigeration Service Engineers Society's eighth annual conference, scheduled for March 16-17 at Mount Royal Hotel, Montreal, have been announced by the committee in charge.

Program will include discussions on expansion valves, types and design; refrigeration cycle through glass; development of Freon refrigerants; frosted food cabinets; adsorption units; and history of low pressure units. Technical sessions will open on Sunday, March 16, following a get-together party on the evening of March 15 with the Mount Royal chapter of R.S.E.S. as host.

REMA TO MEET APRIL 9-11

Annual meeting of Refrigeration Equipment Manufacturers Association will be held in the Edgewater Beach Hotel, Chicago, on April 9, 10 and 11. Meetings of directors and product section meetings will occupy the first two days, with the annual banquet scheduled for the evening of the second day, April 10.

Membership meeting, on April 11, will feature in addition to reports by president H. F. Spoehrer and treasurer Guy J. Henry.

"Value and Use of Commercial Standards" will be discussed by F. W. Reynolds of the National Bureau of Standards at the lucheon sesion. Afternoon session will devoted to merchandising and marketing, with topics to include "Utilizing a Market Survey," "What About Sales Helps?", "How to Plan Sales Meetings," "Let's Talk About Exports," and a panel discussion period. Announcement of new officers for 1947-48 also will be made at the close of the April 11 session.

DETROIT GASKET CO. ABSORBS METALS FIRM

Merger of Extruded Metals, Inc., Belding, Mich., with Detroit Gasket & Mfg. Co., Detroit, has been announced by Lloyd H. Diehl, president of the latter firm.

John L. Barrett, former president of Extruded Metals, is now director and vice president of Detroit Gasket, in charge of Extruded Metals division. Russell A. Blanchard remains manager of the Belding plant.

AIR FILTER CORP. BUYS BADGER FIRM

Air Filter Corp., manufacturer of "Aircor" permanent filters, has announced the purchase at public auction of Badger Corp. This purchase included all basic patents, licenses, copyrights, records, and good will, as well as certain equipment and materials. As a result of this purchase, the Badger air filter has been withdrawn from the market.

INDUSTRY SHIPMENTS TOTAL $50 MILLION IN FIRST SIX MONTHS OF 1946

Air Conditioning Equipment and Components and Accessories for Air Conditioning and Commercial Refrigeration Equipment: Summary of Shipments by Major Class of Product, First and Second Quarters 1946

Product	First Quarter 1946 Shipments of Complete Units					
	Total		Domestic*		Export†	
	Number	Value (dollars)	Number	Value (dollars)	Number	Value (dollars)
Section I—Components and Accessories						
Total	xxx	**22,514,479**	xxx	**21,529,271**	xxx	**985,208**
Condensing units	136,594	9,584,757	131,410	9,110,120	5,184	474,637
Ammonia refrigerants	485	453,847	437	406,083	48	47,764
Refrigerants except ammonia	136,109	9,130,910	130,973	8,704,037	5,136	426,873
Air cooled	128,871	7,038,767	124,026	6,681,035	4,845	357,732
Water cooled	7,238	2,092,143	6,947	2,023,002	291	69,141
Compressors and compressor units	30,264	3,353,035	27,376	3,117,406	2,888	235,629
Ammonia refrigerants	979	1,651,096	847	1,499,501	132	151,595
Refrigerants except ammonia	29,285	1,701,939	26,529	1,617,905	2,756	84,034
Centrifugal refrigeration machines	67	1,358,758	65	1,328,818	2	29,940
Heat exchanger equipment	xxx	8,217,929	xxx	7,972,927	xxx	245,002
Evaporative condensers	1,022	1,033,279	960	986,921	62	46,358
Unit coolers	39,671	3,838,175	39,156	3,719,066	515	119,109
Air conditioning	1,402	830,355	1,365	814,536	37	15,819
Refrigeration	38,269	3,007,820	37,791	2,904,530	478	103,290
Other heat exchanger equipment‡	xxx	3,346,475	xxx	3,266,940	xxx	79,535
Section II—Self Contained Air Conditioning Units and Absorption Systems						
Self contained air conditioning units						
Store type	3,812	2,616,990	3,675	2,537,815	137	79,175
Room type	§	§	§	§	§	§
Miscellaneous air conditioning and refrigeration equipment, including absorption systems	xxx	387,895	xxx	374,746	xxx	13,149

Product	Second Quarter 1946 Shipments of Complete Units					
	Total		Domestic*		Export†	
	Number	Value (dollars)	Number	Value (dollars)	Number	Value (dollars)
Section I—Components and Accessories						
Total	xxx	**27,309,240**	xxx	**25,746,332**	xxx	**1,562,908**
Condensing units	166,454	12,352,884	158,643	11,583,185	7,811	769,699
Ammonia refrigerants	347	361,175	321	331,201	26	29,974
Refrigerants except ammonia	166,107	11,991,709	158,322	11,251,984	7,785	739,725
Air cooled	157,159	9,110,666	149,823	8,474,843	7,336	635,823
Water cooled	8,948	2,881,043	8,499	2,777,141	449	10,3902
Compressors and compressor units	48,182	3,448,211	42,021	3,098,767	6,161	349,444
Ammonia refrigerants	715	1,202,319	602	1,017,701	113	184,618
Refrigerants except ammonia	47,467	2,245,892	41,419	2,081,066	6,048	164,826
Centrifugal refrigeration machines	78	1,582,604	71	1,467,040	7	115,564
Heat exchanger equipment	xxx	9,925,541	xxx	9,597,340	xxx	328,201
Evaporative condensers	1,210	1,231,184	1,091	1,105,351	119	125,833
Unit coolers	48,218	4,188,031	47,839	4,093,211	379	94,820
Air conditioning	1,526	811,784	1,488	796,223	38	15,561
Refrigeration	46,692	3,376,247	46,351	3,296,988	341	79,259
Other heat exchanger equipment‡	xxx	4,506,326	xxx	4,398,778	xxx	107,548
Section II—Self Contained Air Conditioning Units and Absorption Systems						
Self contained air conditioning units						
Store type	3,657	2,576,376	3,581	2,540,386	76	35,990
Room type	§	§	§	§	§	§
Miscellaneous air conditioning and refrigeration equipment, including absorption systems	xxx	916,151	xxx	911,264	xxx	4,887

NOTE: The symbol "-" denotes zero. The symbol "xxx" denotes not applicable.

**Continental United States.*

†Includes Canada, Mexico, and United States territories.

‡Includes condensers and liquid coolers, shell and tube and shell and coil types, as well as fin coils (heating and cooling) and plate type evaporators.

§Data on shipments of room type air conditioning units combined as follows for first and second quarters, to avoid disclosure of operations of individual companies: Total—2,486 units, $660,379; Domestic—2,073 units, $563,814; Export—413 units, $96,565.

* * *

COMM'L COOLING SALES INCREASE

Dollar volume of shipments of commercial refrigeration and air conditioning equipment for the first six months of 1946 totaled nearly $50 million, a rise of 24% over the $40 million figure recorded for the last half of 1945, according to reports made to the Bureau of Census of the U.S. Department of Commerce.

This increase was due primarily to the sharp rise in the shipments of heat exchanger equipment which increased 49%.

These statistics cover equipment actually billed and shipped during the first and second quarters of 1946, and are equivalent to completed sales. Complete units delivered on consignment or shipped to branch warehouses for stock are not included. Dollar values shown are the manufacturer's net billing price, f.o.b. factory.

All types of air conditioning equipment and components and accessories normally sold as standard items are included. In addition, certain types of railroad air conditioning and self-contained refrigeration units for trucks and trailers, as well as absorption systems, have been included in these reports in the miscellaneous category.

The statistics are based on reports submitted by 71 manufacturers, eight more than the 63 manufacturers included in the survey for the previous six months. Estimates were made for a few companies, representing a small portion of the total industry, that did not submit their reports in time to be tabulated.

NEW TEXAS FIRM

Refrigeration Products Corp. of Texas has been incorporated at Fort Worth, by H. B. Howry, Lillian B. Howry and J. A. Howry with $12,000 authorized capital stock.

Freezer Sales Hit $12 Million In 6 Months

Shipments of Home and Farm Freezers, First and Second Quarters 1946

(Includes a small number of combination cooler-freezer units)

Size	Shipments of Complete Units: Total Number	Total Value (dollars)	Self-contained Units Number	Self-contained Units Value (dollars)	Remote Units Number	Remote Units Value (dollars)
First Quarter—1946						
Total	**23,161**	**5,309,451**	**21,972**	**4,931,809**	**1,189**	**377,642**
Under 6 cubic feet*	1,685	202,714	1,685	202,714	–	–
6.1 to 8 cubic feet			3,487	476,068		
8.1 to 12 cubic feet	*14,720	*2,991,725	5,398	1,084,037	*46	*10,670
12.1 to 15.9 cubic feet			5,789	1,420,850		
16.0 to 20 cubic feet	4,742	1,299,329	4,153	1,163,913	589	135,416
Over 20 cubic feet	2,014	815,683	1,460	584,127	554	231,556
Second Quarter—1946						
Total	**28,870**	**6,735,050**	**27,279**	**6,194,769**	**1,591**	**540,281**
Under 6 cubic feet*	3,640	453,114	3,640	453,114	–	–
6.1 to 8 cubic feet			4,975	761,905		
8.1 to 12 cubic feet	*15,496	*3,172,515	3,382	662,470	*102	*24,721
12.1 to 15.9 cubic feet			7,037	1,723,419		
16.0 to 20 cubic feet	6,329	1,750,119	5,927	1,657,783	402	92,336
Over 20 cubic feet	3,405	1,359,302	2,318	936,078	1,087	423,224

Size	Purchases of Components: Condensing Unit (number)	Compressor Unit (number)	Forced Air Evaporator (number)	Enclosure Only (number)	Total Purchase Value (dollars)	Number of Plants
First Quarter—1946						
Total	**22,053**	**2,479**	**27**	**120**	**1,370,168**	**93**
Under 6 cubic feet*	2,145	35	–	–	106,337	17
6.1 to 8 cubic feet	2,745	957	–	–	140,523	10
8.1 to 12 cubic feet	4,743	449	–	8	255,047	28
12.1 to 15.9 cubic feet	5,882	17	27	31	375,101	35
16.0 to 20 cubic feet	4,188	752	–	81	300,013	48
Over 20 cubic feet	2,350	269	–	–	193,147	27
Second Quarter—1946						
Total	**25,686**	**1,844**	**–**	**33**	**1,481 704**	**95**
Under 6 cubic feet*	3,616	35	–	–	144,254	19
6.1 to 8 cubic feet	4,029	1,110	–	–	224,519	9
8.1 to 12 cubic feet	3,625	132	–	1	180,612	28
12.1 to 15.9 cubic feet	6,125	203	–	3	363,679	40
16.0 to 20 cubic feet	5,778	120	–	34	358,746	45
Over 20 cubic feet	2,513	244	–	–	209,894	28

**Combined to avoid disclosure of operations of individual companies*

Comparison of 1945 & 1946 Cooling Sales

Shipments of Air Conditioning Equipment and Components and Accessories for Air Conditioning and Commercial Refrigeration Equipment: Summary By Major Class, First Half and Second Half of 1945 and First Half of 1946

Product	Shipments of Complete Units: January-June 1946 Number	January-June 1946 Value (dollars)	July-December 1945 Number	July-December 1945 Value (dollars)	January-June 1945 Number	January-June 1945 Value (dollars)
Total	**xxx**	**49,823,719**	**xxx**	**40,331,825**	**xxx**	**31,563,882**
Condensing units	303,048	21,937,641	222,901	19,963,353	131,500	16,938,567
Ammonia refrigerants	832	815,022	820	951,871	965	1,550,786
Refrigerants except ammonia	302,216	21,122,619	222,081	19,011,482	130,535	15,387,781
Air cooled	286,030	16,149,433	206,851	12,888,128	120,180	10,490,167
Water cooled	16,186	4,973,186	15,230	6,123,354	10,355	4,897,614
Compressors and compressor units	78,446	6,801,246	55,464	5,880,390	51,876	3,697,969
Ammonia refrigerants	1,694	2,853,415	1,988	3,261,573	1,223	1,797,424
Refrigerants except ammonia	76,752	3,947,831	53,476	2,618,817	50,653	1,900,545
Centrifugal refrigeration machines	145	2,941,362	151	2,292,873	34	700,619
Heat exchanger equipment	xxx	18,143,470	xxx	12,195,209	xxx	10,226,727
Evaporative condensers	2,232	2,264,463	1,775	1,758,386	1,110	1,070,291
Unit coolers	87,889	8,026,206	51,647	6,085,612	39,356	4,100,945
Air conditioning	2,928	1,642,139	2,133	1,162,024	717	322,947
Refrigeration	84,961	6,384,067	49,514	4,923,588	38,639	3,777,998
Other heat exchanger equipment*	xxx	7,852,801	xxx	4,351,211	xxx	5,055,491

NOTE: The symbol "xxx" denotes not applicable.

**Includes condensers and liquid coolers of shell and tube and shell and coil types as well as fin coils (heating and cooling) and plate type evaporators.*

52,000 FREEZERS SHIPPED IN 6 MO.

Somewhat more than 52,000 home and farm freezers, valued at more than $12 million, were shipped by manufacturers during the first half of 1946, according to statistics released by the Bureau of Census of the U.S. Department of Commerce.

Virtually 95% of these units were of the self-contained type, only slightly over 5% of them having been designed for remote installation of refrigeration units.

By far the most popular models of the self-contained units were in the 12.1 to 15.9-cu. ft. size range, according to shipments reported, over 26% of total shipments falling into that classification. The remote installation units logically ran to larger sizes, with 59% of total shipments comprised of units with more than 20-cu.ft. capacity.

The Census Bureau statistics were compiled from reports received from 156 companies, 93 of which reported during the first quarter while 95 reported in the second quarter.

NEW PLANT ADDED BY AMERICAN COILS

A new plant in Newark, N. J., has been acquired by American Coils Co. for the assembling of self-contained and remote type air-conditioning equipment.

S. R. Hirsch has been named vice president of Amcoil and has assumed charge of the new plant, which will be known as Plant II and which is the seventh addition to Amcoil's facilities in recent months. Mr. Hirsch comes to Amcoil from Brunner Mfg. Co., where he was chief engineer.

The new plant with Mr. Hirsch in charge will concentrate on the assembly of the company's "De Luxe Food Conditioners," the "Zero Breeze Low Temperature Automatic Defrost Units," and five new lines of air conditioning equipment bearing the trade names "Latenaire" and "Sensaire."

Continued from page 35

the point selected should lie on or near the 90% relative humidity curve.

Of course, there will be circumstances when the ratio line does not intersect either the 90% or 100% ratio line. This will be true whenever the sensible heat ratio is low, as will be the case when the latent heat load of a room is very high or the relative humidity of the room is to be kept very low. In these situations, reheating of the air cannot be avoided, unless a separate dehumidifying apparatus is used prior to cooling.

SELECTING SUPPLY AIR CONDITIONS FROM THE PSYCHROMETRIC CHART: Figure 3 shows the Trane Psychrometric Chart with the various ratio lines ruled on it for a room to be kept at 80 F DB—67 F WB. The ratio lines represent sensible heat ratios (SHR) of .5, .6, .7, .8, and .9 respectively. An inspection of Figure 3 shows the following supply air temperatures to be necessary when the supply air is to be either at a condition of saturation (100% relative humidity) or at a condition of 90% relative humidity:

SHR	100% RELATIVE HUMIDITY	90% RELATIVE HUMIDITY
.9	59 F DB—59 F WB	62 F DB—60 F WB
.8	57 F DB—57 F WB	60.4 F DB—58.7 F WB
.7	53 F DB—53 F WB	56.8 F DB—55 F WB
.6	not possible	44.5 F DB—43 F WB
.5	not possible	not possible

If we follow the path of the .5 ratio line, it will become evident that the desired room conditions cannot be maintained with any air supply at a humidity greater than 60%. Likewise, in the case of the .6 ratio line, it will be necessary to resort to a very low dry-bulb temperature in order to have an air supply at 90% relative humidity. This is not a desirable condition inasmuch as the low refrigerant temperature required will cause the formation of ice on the cooling surfaces, thus cutting down on the air flow and reducing the heat transfer efficiency. Also, should the air distribution be faulty in some respects, drafts will be more noticeable when air supply temperatures are low.

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Get up-to-date on insulation construction methods!

A completely new and revolutionary method of fireproof refrigeration construction has been developed by Gold Bond engineers! This new method of using Zerocel Insulation not only gives you greater efficiency and permanence, but it gives it to you at a big saving over old-fashioned methods.

Zerocel installed with metal lath, channels, and Portland cement plaster replaces old-style construction methods using board forms of insulation and provides stronger walls, ceilings (that won't fall down), and a better looking finish. With this construction, condensation does not occur in the insulation. This versatile method, a development of Gold Bond's 20 years experience in the construction industry, applies equally well to locker plant, cold storage warehouse, and processing plant problems. Find out all about this new method today! Fill in the coupon below and mail to Industrial Division, National Gypsum Company, Buffalo 2, N. Y.

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tions, air supply temperatures between 50 F and 60 F are most consistent with both the attainment of good results and what can be produced economically with commercial equipment available. If the intersection of the ratio line with the 90% or 100% relative humidity curves on the psychrometric chart does not lie within this range of temperatures, it is advisable to try and bring this about by altering room conditions, thereby changing both the sensible heat ratio and the location of the point representing room conditions and consequently producing a completely new ratio line. Whenever possible, of course, the same effective temperature in the room should be maintained.

By changing room conditions to an equivalent effective temperature and thereby also changing the room sensible heat ratio, it is often possible to produce a ratio line which will intersect with the high humidity curves between temperatures of 50 F—60 F, and thus permit the use of air directly as it comes from the cooling apparatus without the need for reheating or chemical dehumidification.

Figure 4 shows the various ratio lines drawn for two room conditions which have the same effective temperature (74 F) as 80 F DB—67 F WB. The equivalent effective temperatures were selected from the Comfort Chart reproduced in Part I, and are as follows: 78 F DB—70 F WB and 82 F DB—64 F WB. An inspection of Figure 4 shows the wide variety of ratio lines obtainable by varying room conditions. For any given problem, however, varying room conditions also changes the sensible heat ratio, so that the same ratio line drawn for different room conditions will not apply to a given problem. This will be illustrated in problems to be presented later.

CASES WHERE REHEATING IS NECESSARY: There will be situations where it may be impossible to produce a ratio line which intersects with the high humidity curves between temperatures of 50 F—60 F, no matter how room conditions are altered. At other times, exact room conditions will have to be maintained, so that a new ratio line will be impossible. In these cases, reheating may be used after cooling in order to bring the air to a point on the ratio line. For example, let us refer to the .5 ratio line shown on Figure 3. Air delivered to the room in a condition designated by any point along this line will maintain desired room conditions. However, air in any state represented by the .5 ratio line cannot be obtained directly with equipment which simultaneously cools and dehumidifies air. Therefore, we may first cool the air to some feasible point near the high humidity curves, such as is represented by point A on Figure 3. Then we can heat the air along a horizontal line until point B lying on the .5 ratio line is reached. Air introduced into the room in a state as designated by point B will maintain the desired room conditions.

Mr. Moncher's discussion of the selection of supply air temperatures will be concluded in next month's issue.

THERMOSTATIC EXPANSION VALVE TXV TESTER

A Revolutionary NEW testing device by AIRSERCO—makers of the famous Thermostatic Control Tester.

Another AIRSERCO short-cut for the Service Engineer—a time-saver and money-maker that tests and sets the super-heat requirements for all types of thermostatic expansion valves.

- INDICATES by gauge readings the actual super-heat setting of the valve being tested.
- ENABLES the service engineer to quickly set any thermo valve for any refrigerant.
- EXAMINES the true performance of the thermo valve by taking it in and out of its operating range.
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AIRSERCO MANUFACTURING CO., INC.
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Short Cuts for the Service Engineer

NEW OKLAHOMA PLANT

The Marietta Frozen Locker plant has been opened in Marietta, Okla., with 465 lockers and slaughter, chilling, processing and curing rooms.

Continued from page 43

turns on this first mailing, the company was able to concentrate the next two mailings on the classifications shown to be most fertile.

Careful records were kept of the types of businesses that sent in return cards from each of the three mailings. A summary of this study is shown in Table 1 at the right.

Commenting on this tabulation of returns, Mr. Heggie explained: "The lower number of returned cards resulting from the third mailing should not be interpreted as a criticism of the card itself. We think the last card is the best of the three. The reduced return, we believe, is merely a result of the previous two mailings having combed out the prospects so that the final card had less 'pay dirt' to work on."

Here is how the 97 actual sales of packaged air conditioners resulting from this direct mail campaign were distributed according to types of businesses:

BUSINESS	UNITS SOLD
Store	34
Cafe, Tavern, or Tap Room	25
Office	16
Restaurant	12
Beauty Shop	2
Bowling Alley	2
Funeral Chapel	1
Miscellaneous	5
Total	97

In addition to these sales, however, Mr. Heggie firmly believes that at least 40 to 50 more sales can be indirectly attributed to this sales promotional activity.

The results of this campaign thoroughly convinced Mr. Heggie of the merits of this type of promotional activity for merchandising packaged air conditioning equipment.

"Entirely aside from the actual number of sales attributable either directly or indirectly to these three mailings," he declares, "there is the unquestioned ultimate sales value of the effect of approximately 40,000 sales messages on Chrysler Airtemp packaged air conditioning which were distributed in this area by means of these cards. Our experience has shown that the effect of a direct mail campaign such as this does not terminate with the final mailing, but continues to be of useful value for many months to come."

TABLE 1

Analysis of returns by type of business

BUSINESS	1ST MAILING	2ND MAILING	3RD MAILING
Store	96	118	126
Cafe, Tavern, or Tap Room	46	41	21
Office	115	85	43
Restaurant	14	44	25
Beauty Shop	19	17	15
Bowling Alley	4	2	2
Funeral Chapel	13	18	6
Barber Shop	5	3	4
Photo Studio, Lodge, Club	—	4	7
Residential	17	15	14
Miscellaneous	13	6	2
Total Returns	342	353	265

Make BIG money in BIG markets

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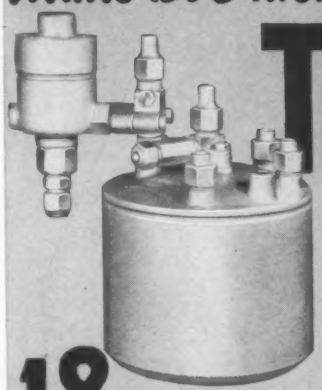
Temprite

LIQUID COOLERS



18 Models now available!

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Liquid cooling models have capacities ranging from 3 gallons per hour up to 2,200 gallons per hour.

TYPICAL APPLICATIONS

Industrial or Drinking Water Cooling
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Chemical Cooling
•
X-Ray Processing
•
Photographic Processing
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Beverage Cooling

Get acquainted with the wide profit possibilities in Temprite liquid coolers. 18 Temprite models are adaptable to virtually all cooling applications in carbonated beverages, oils, chemicals and countless other industrial and commercial applications.

SMALL BUT MIGHTY

Good things come in small packages and Temprite liquid coolers are no exception. They're highly compact, require minimum space. A model to fill any capacity requirement.

INSTANTANEOUS COOLING

Water coils are submerged in the liquid refrigerant itself and the heat of the liquid being cooled, passes directly into the main body of the refrigerant. Exclusive Temprite design gives instantaneous heat transfer.

WIDE TEMPERATURE RANGE

Temprite coolers are made to fill a wide range of temperature needs. Super-sensitive control valve assures constant temperature under all operation conditions.

TEMPRITE PRODUCTS CORP.

Originators of Instantaneous 80° 40° *Liquid Cooling Devices*

41 PIQUETTE AVENUE DETROIT 2, MICHIGAN

EXPANSION VALVES . . .

Continued from page 33

Figure 7 shows that during surging, the changes in suction pressure at the coil outlet lag the changes at the coil inlet. This lag may be a matter of several seconds to a minute, and since this delayed change in pressure is the one to which the valve bellows responds when the equalizer is tied in to the suction manifold, "hunting" or "surging" is increased. The valve tends to stay closed longer when it closes, thus causing an extra lowering of suction pressure which in turn tends to open the valve wider when the thermostatic bulb warms up.

Mild cases of surging may cause the suction pressure to vary up and down by a 3 or 4 psi pressure change, but in some instances where the external equalizers tie into the suction manifold, the surge may have a magnitude of 20 psi or more.

When the external equalizer is tied into the inlet of the coil or into the inlet of one circuit of a multiple circuit coil, the valve bellows feels the pressure change quicker and therefore the control of the valve, in responding quicker, may cause the surge in pressure to be reduced to 25% or less of that occurring when the equalizer connection is connected to the suction manifold.

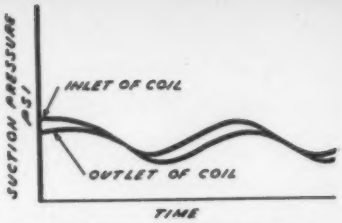


Fig. 7—Changes in suction pressure at coil inlet and outlet during surging.

Surging is harmful in that the average coil capacity is considerably less when surging occurs, and also, premature shutdown of the unit may occur when pressure controls are used. Considerable variation in outlet air temperature from the conditioner unit may also be an objection to surging and in some instances liquid slugs reaching back to the compressor during the overfeed part of the surging cycle may cause compressor damage.

Pressure Limiting Devices

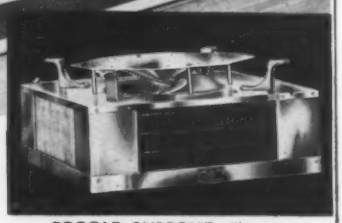
In the advantages of thermostatic expansion valves we always include the fact that thermostatic valves tend to keep the evaporator completely refrigerated.

Whereas this characteristic is usually advantageous, in some instances it may be harmful. For instance, suppose evaporating temperatures in a freezer are to be maintained in the range from -40 F to -10 F. Throughout this range in temperatures, it is best to keep the coil completely refrigerated, but if the freezer is starting in from a warm condition of say 70 F, the completely refrigerated coil might require evaporating temperatures of 50 F or over so until such time as the freezer temperature was reduced considerably, a high suction pressure would occur. With the high suction pressure, the motor driving the compressor will be badly overloaded, perhaps more than 100% if the motor is belted to develop rated power at the low temperatures which are normal in the freezer application. In general, three

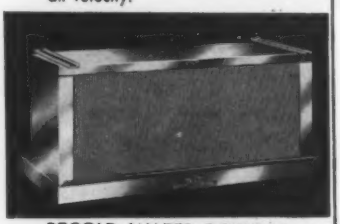
Culminating more than fifteen years of steady growth and leadership in the field of refrigeration evaporators, "RECOLD" looks towards the future with confidence. A new plant equipped for greater expansion and geared for mass production of "Recold" products is an important milestone in the progress of our organization.

Your continued acceptance of the "Recold" trade mark as a standard of quality will constantly be merited by continued new developments in our industry. Look for more and better things from "Recold."

"Remember if it's a Recold—It's Right."



RECOLD SUPREME—The perfect coil for fresh meats and flowers. High humidity and low air velocity.



RECOLD WATER DEFROST
Evaporator for low temperature applications.

RECOLD

REFRIGERATION ENGINEERING, INC.

7250 East Slauson Ave., Los Angeles 22, Calif.

methods may be used to automatically keep the motor load down to near normal under the conditions mentioned.

One method of unloading the motor under high suction pressure conditions is to partially unload the compressor. This may be accomplished by partial unloading devices which cut out part of the cylinders of a multi-cylinder compressor at high suction pressures and cut them into operation as the suction pressure is reduced. Such unloading devices, of course, could be responsive to suction pressure or motor current.

A second method of compressor unloading consists in the use of a throttling valve in the suction line which is responsive to suction pressure in the compressor. Either this or the first method of unloading allows the thermostatic expansion valve to keep the coil completely refrigerated but reduces the compressor capacity to that which can properly be handled by the motor.

A third method of compressor unloading may be embodied into the thermostatic expansion valve by "gas charging" or by mechanical limiting devices. Gas charging, as used to limit the compressor load for low temperature applications, consists in charging the thermostatic element of the thermostatic expansion valve feeler bulb with a limited amount of the thermostatic fluid as determined by the pressure of the gas in the power element. In this case, when the temperature of the thermostatic element rises, any increase in pressure within the element is only in direct ratio to the increase in absolute temperature or in raising the temperature of the power element from 20 F to 70 F would cause and increase in pressure of

$$\frac{70-20}{460+20} = \frac{50}{480} =$$

10.4% in absolute suction pressure. However, as the temperture of the feeler bulb is reduced from 20 F to -30 F, some of the gas condenses in the feeler bulb and the pressure then varies according to the vapor pressure curve of the charging fluid used.

The suction pressure of a freezer coil with a pressure limiting device built into the thermostatic expansion

"ESTABLISHING and Operating an Air Conditioning and Refrigeration Business" is the title of a new booklet issued by the U.S. Department of Commerce. Authors of the booklet are V. C. Kyleberg, William L. Beck and Howard E. Way.

Purpose of the booklet is "to explain the nature of the refrigeration and air conditioning business, set forth some of the opportunities in the field, and explain what skills are needed to successfully operate a small business within the industry." It is explained that "while many aspects of the industry are really big business and require considerable capital, there are opportunities for successful enterprises for the man with but a small amount of capital to invest in his own business."

In addition to background data on the industry, chapters are included on setting up as a dealer, as a contractor and engineer, as a service operator, or as a distributor or manufacturer. Business organization and outlook also are covered, and charts are statistics on applications and marketing methods are included in appendices to the booklet.

Copies are obtainable at 20 cents each from the Superintendent of Documents, Washington 25, D. C., or from Department of Commerce field offices in various cities.

...to me it means "DESICCANT DEVELOPMENT"

Davison research constantly has improved the performance qualities of Davison Refrigeration Grade Silica Gel. That's why the can *that bears the familiar Blue Label* maintains its established position as the industry's standard drying agent. Ask your jobber for Davison Silica Gel . . . in factory-charged dehydrators or for refilling!

"DEPEND UPON THE CAN WITH THE BLUE LABEL!"

THE DAVISON CHEMICAL CORPORATION

Progress through Chemistry

BALTIMORE-3, MD.

PIONEERS AND DEVELOPERS OF SILICA GEL

Canadian exclusive sales agents for DAVISON SILICA GEL:
CANADIAN INDUSTRIES LIMITED, General Chemicals Division

valve either mechanically or by gas charging would be essentially as shown in Figure 8.

Low Temperature Valves

When temperatures to be produced are -50 F or lower, normal valve construction may be inadequate for several reasons. For instance, the lubricants used may tend to harden so much that the valves have a sticky action. Further, pressure changes are very small for corresponding temperature changes, and consequently the operating elements of the valve lack controlling power. This may be remedied by the use of two-bulb valves in which the pressure of two temperature elements work against each other to control the valve opening. High pressure refrigerants can then be used to control the valves. For instance, if the power elements were gas charged with CO_2, the change in pressure from -50 to -60 F would be appreciable, while if charged with Freon 12, the change in pressure would be negligible. In this way, the valve may be sensitive to very small temperature differences regardless of the pressure in the system's refrigerant. Such valves, mechanically, would work with any refrigerant.

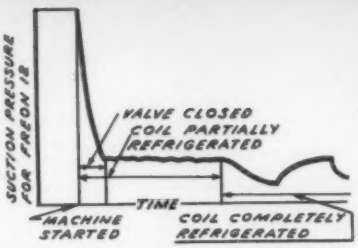
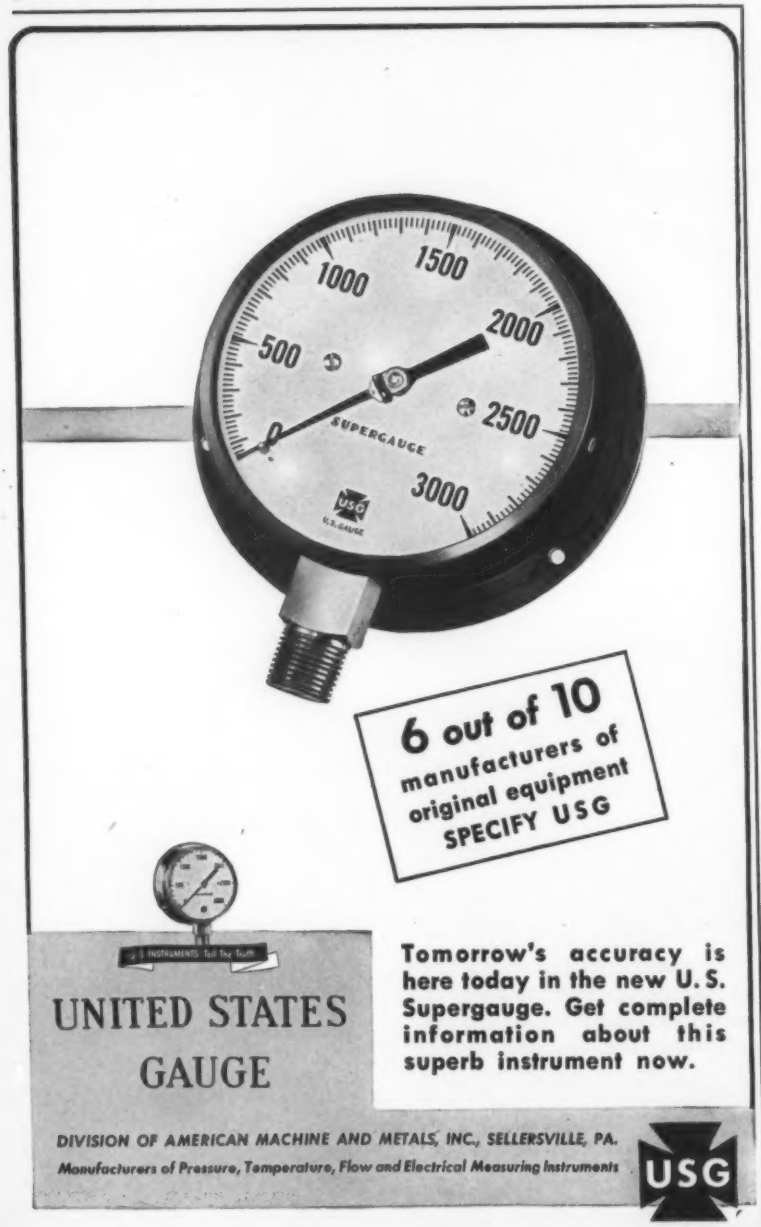


Fig. 8—Suction pressure of a freezer coil with a pressure limiting device built into the thermostatic expansion valve.

This is the second of three articles by Mr. Clark on thermostatic expansion valves. The third article will be published next month.



EMPLOYEE parties can do much to improve the cooperation, coordination, and morale of any refrigeration service organization, believes J. David Braverman, head of Philadelphia's Official Service. Moreover, Mr. Braverman practices what he preaches. Each year he stages just such a blowout for the entire personnel of his organization.

That fact, in itself, can hardly be classified as news. Many service companies do the same.

The unusual aspect of the Official Service parties is the way in which they are financed. Like any service organization, this firm builds up during the course of a year quite a salvage pile of scrap copper. Once each year Mr. Braverman sells this scrap copper at the highest possible price—then uses the proceeds to pay the bill for the annual company shindig.

ROCHE & HULL, INC. IN LARGER QUARTERS

Roche & Hull, Inc., Baltimore refrigeration supplies wholesaler, has moved to new and larger quarters at 1107-19 Maryland Ave., reports George J. Roche, president.

COOLING IN THE KITCHEN

According to *American Restaurant* magazine, "in restaurants where kitchens have been air conditioned, the efficiency of the help has been found to increase as high as 30% and absences because of sickness greatly reduced."

Commercial Credit Financing Plans for the Commercial Refrigeration Industry include such advantageous features as wholesale financing accommodations; limitation of liability; property insurance for all interests; supplemental FHA terms, where eligible FHA replacements and improvements are included; one contract to cover retail sales involving the products of two or more manufacturers*; 100% advance.

Examples of eligible installations under our Commercial Refrigeration Plan include:

- ROOM COOLERS (Over 1 H. P. Capacity)
- REACH-IN-CABINETS
- ICE CREAM CABINETS
- DISPLAY CASES
- SODA FOUNTAIN EQUIPMENT
- AIR CONDITIONING EQUIPMENT
- LOCKER SYSTEMS
- BEER DISPENSING EQUIPMENT
- WALK-IN-CABINETS
- FROZEN FOOD CABINETS
- MILK COOLERS
- FARM FREEZERS
- BEVERAGE COOLERS

*(By arrangement with more than 15 Manufacturers)

For complete information, sample forms, write to any of our local offices throughout the country.

COMMERCIAL CREDIT CORPORATION

MORE THAN 300 OFFICES IN PRINCIPAL CITIES OF THE UNITED STATES AND CANADA

In a number of personnel changes at Perfex Corp., **Paul F. Neess** has been named manager of controls sales engineering. He has been with Perfex since 1936, serving as chief inspector and chief test engineer. **Richard E. Toellner,** former field engineer in the Milwaukee district, has been named Detroit district manager.

Mr. Neess

In the executive bracket, **Julius K. Luthe,** Perfex president, has been elected chairman of the board of directors. **Carroll E. Lewis,** recently named executive vice president, succeeds Mr. Luthe as president and a director of the company.

●

Walter G. Swaney has been elected president of Kerotest Mfg. Co. and **Stanley J. Roush** has been named executive vice president. **Edward G. Mueller,** former president, now is chairman of the board. Other officers elected included: **A. W. Anderson,** works manager and director of purchases, and **Ralph E. Lane,** secretary-treasurer. Mr. Swaney was one of the original members of the Kerotest firm, having started as a clerk in 1905.

●

Don Mack has resigned as director of advertising and sales promotion of Weber Showcase & Fixture Co., Los Angeles, to open his own advertising agency (Don Mack, Advertising) at 7250 East Slauson Ave., Los Angeles. He has been appointed to handle the Weber account, and also will handle advertising for Refrigeration Engineering, Inc., Sandee Muffler Co., Thermal Products Co. and Rose Electro Therapy Mfg. Co.

The advertising department of Weber will be under the direction of **Todd Reiland,** who formerly was assistant advertising manager of the company.

●

Henry A. Voskamp, Jr. has been appointed plant superintendent of Wilson Cabinet Co., Smyrna, Del., with full charge over the entire operation of the plant. He had been with Armstrong Cork Co., Lancaster, Pa., for 11 years prior to his present appointment.

●

Reber C. Stupp has been elected a vice president and director of Jack & Heintz Precision Industries, Inc. He will serve as the firm's production manager. Mr. Stupp for the past four years has been plants manager for Delco Products Division, General Motors Corp., with headquarters in Dayton.

Mr. Stupp

Joseph E. Rogers, Cleveland industrialist, has been elected a Jack & Heintz director and a member of the executive committee.

●

Robert A. Chadburn has joined the Heat-X-Changer Co. of Brewster, N. Y. as chief engineer. He was formerly refrigeration engineer with George G. Sharp, New York naval architect.

●

James P. Henderson has joined Gotham Instrument Co., Inc. as general manager and chief engineer to guide the expanded production facilities and sales of all Gotham products. Mr. Henderson, who spent 19 years with C. J. Tagliabue Co., also was engaged for several years in independent development of mechanical electrical and electronic instruments.

●

A. J. DeFino has been named sales manager of the condenser division of Fedders-Quigan Corp. This division

Mr. DeFino

Mr. Bonneville

recently has been set up as a separate unit to handle contract sales to large household and commercial refrigerator manufacturers. Mr. DeFino previously was connected with the firm's refrigeration division.

Appointment of **E. A. Bonneville** as sales manager of the company's refrigeration and unit air conditioner divisions was announced in the February issue of The Refrigeration Industry.

●

Robert P. Smith, manufacturers' agent with headquarters in Jacksonville, Fla., has been named distributor in that city for Wagner Electric Corp. Mr. Smith formerly was Florida manager for Westinghouse Electric Supply Co.

●

E. W. Haefner has been appointed an assistant general sales manager of the Airtemp Division, Chrysler

Mr. Haefner

Mr. Winters

Corp. Until his appointment to this post, Mr. Haefner served as manager of the parts and service department. In his new position he will supervise

the merchandising, sales records, order, application, and parts and service departments.

J. H. Winters has been promoted to the post of eastern divisional manager for Airtemp, and will have charge of the Boston, Syracuse, New York, Philadelphia, and Washington regions. Prior to his appointment, Mr. Winters had been staff assistant to the vice president and sales manager.

MARSHALL & SMITH HEAD NEW WHOLESALE HOUSE

Meet the principals of one of the East's newest wholesalers of refrigeration and air conditioning parts and supplies, R. D. Marshall Co., Inc., Albany, N. Y. R. D. Marshall is president and treasurer of the firm; K. W. (Ken) Smith is general manager. Ellen B. Marshall is vice president and secretary.

Ken Smith

Doug Marshall

Mr. Marshall served for the last eight years as manager of the New York office of Automatic Products Co. Previously he had been associated with Delavan Engineering Co. of Des Moines, Iowa, as one of the original partners. Prior to the formation of the Delavan firm, Mr. Marshall was with Penn Electric Switch Co.

Mr. Smith has been active in the refrigeration wholesaling field for eight years. He was manager of the Albany and Manhattan branches of Melchoir, Armstrong, Dessau Co., Inc., before the war, and after his discharge from the U. S. Army Air Forces he managed that company's Syracuse branch. Prior to entering the wholesaling business, Mr. Smith was associated with his father in the refrigeration business in Albany.

The new firm plans to cover the territory of eastern New York State bounded roughly by Kingston on the South, Little Falls on the West, and the Canadian border on the North. Western Massachusetts and Vermont also will be served.

R. H. Pizor, formerly manager of laundry equipment sales for Norge,

has been appointed sales manager of the eastern region, effective March 1, with headquarters in New York City. He succeeds E. L. Frohlich, who has resigned to become vice-president in charge of sales for Warren-Connelly Co., Norge New York distributor.

Mr. Pizor joined Norge in 1934 and has held several important positions. During the war he was executive assistant to O. H. Shenstone, manager of the company's Muskegon plant, and was in charge of industrial relations.

●

E. B. Maire has been named regional sales manager of the midwestern, southern and eastern branch offices of General Controls Co.

"Br-r-r-r-r! IT'S FREEZING!"
You bet it's freezing. Not only that, it's faster freezing! And that's what warms up the hearts of customers who have PEERLESS FLASH PLATES in their locker plants and similar installations. They like that faster freezing, the lower operating and maintenance cost! They like the superior performance for less given by PEERLESS FLASH PLATES and they become lifetime customers of the dealers who provide this superior refrigeration. That's why Peerless of America, Inc., is now producing huge quantities of the new PEERLESS ZERO and SUB-ZERO FLASH PLATES. They're in demand!
PEERLESS FLASH PLATES are available in quantity for YOUR installations. Specify them for all low temperature applications. Non-ferrous high conductivity and UNIFORM distribution of refrigerant throughout each plate does the trick — insures that fast action and low operating cost. Continuous tubing eliminates leaks. The gleaming aluminum finish is handsome and durable. Light weight, approximately 2½ lbs. per square foot, cuts shipping and handling cost.
PLATES IN BANK FORMATION
NEW PEERLESS FLASH PLATE
PLATES IN BANK FORMATION
Investigate other PEERLESS products. You'll find you get superior performance with every one. Why? Because always "Peerless is Priceless in Quality!"
PEERLESS
SOLD THROUGH LEADING REFRIGERATION SUPPLY WHOLESALERS
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for TEMPERATURE*
for MOTOR OPERATION*

2 Recorders*
for LESS than the
PRICE of ONE

The TEMPSCRIBE Recorder is outstanding for its universality. Any TEMPSCRIBE can be quickly converted from temperature recording to time-operation recording simply by changing the door of the instrument. A widely-used combination comprises one clock case (having a 24-hour spring-wound movement) and two doors (one with a bi-metallic temperature element, and one with mechanism for recording motor on-and-off time). This economical set costs very much less than a dual recorder. Even two complete TEMPSCRIBES, to obtain simultaneous records of temperature and motor operation, cost no more than you would normally expect to pay for a single instrument that makes dual records, yet give you all the advantages of two separate instruments!

Bul. 704 gives list of ranges, practical application data, and complete details.

Ask Your Wholesaler, or Orders Filled Direct.

BACHARACH Industrial Instrument Co.
7000 BENNETT STREET • PITTSBURGH 8, PA.

Photo courtesy Marlin Firearms Co.

BETTER WORK
from Quickee-clean
HANDS!

Your hands are the most valuable tools of all! Grime, grease and dirt cut down their efficiency—more than you know. Cracked skin, chapping make them stiff and clumsy. For more, *better* work, take care of your hands!

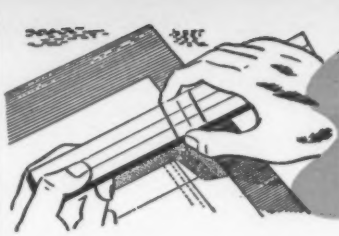
New, different QUICKEE removes grime...grease...paint—in 17 seconds flat! Contains LANOLIN—good for the skin, prevents chapping. Uses NO WATER. Saves time, trouble and money.

TRY QUICKEE on the job—at home!

QUICKEE WATERLESS
HAND CLEANER

Send for FREE SAMPLE

TUDOR CHEMICAL SPECIALTIES, INC.
Tudor Bldg., New York 53, N.Y.



New PRODUCTS

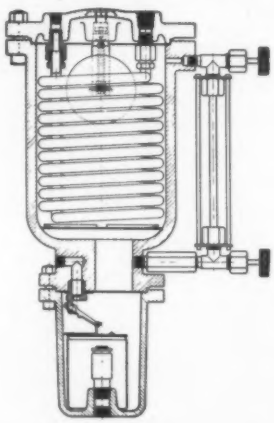
For further information on any of these products, simply list the key number at the head of each item on the special post card enclosed with this issue.

Purger • • • • • • P-32

Product: Non-condensible gas purger for refrigerating systems.

Manufacturer: Armstrong Machine Works, Three Rivers, Mich.

Features: Design essentially same as in previous Armstrong models except that the refrigerating jacket has



been replaced by an internal coil. Use of the coil increases by approximately 50% the condensing surface available for separating non-condensible gases from the refrigerant. New non-condensible gas discharge mechanism. Adaptable to systems of virtually any capacity, purger is available in two styles: No. 270 with semi-steel body for pressures up to 200 psi, and No. 370 with forged steel body for pressures up to 300 psi.

Dehydrators • • • • P-33

Product: Dehydrators of both refillable and non-refillable types.

Manufacturer: Electrimatic Division, Simoniz Co., Chicago.

Features: Filled with silica gel, these dryers withstand test pressures up to 5,000 psi. Inlet screen is monel metal, 60 x 60 mesh; outlet filter is porous bronze metal. No organic felts or other materials are used. Steel flare nuts with copper sealing caps seal the dehydrator, and may be used

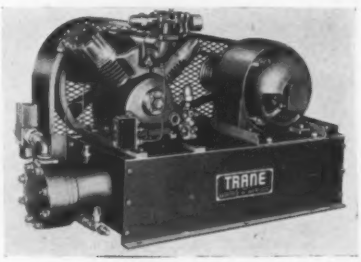
to connect copper tubing at the time of installation. In the refillable models an especially designed diffusing spiral is used in connection with a tubular inlet screen which provides increased area at the point where dirt is most likely to accumulate. The spiral promotes uniform diffusion of gas into the silica gel. Inlet screen is removable for cleaning, and refilling dryer with silica gel when required.

Compressor Line • • P-34

Product: Reciprocating compressor and condensing unit line.

Manufacturer: The Trane Co., LaCrosse, Wis.

Features: Sizes range from 3 to 100 tons capacity. Forced-feed lubri-



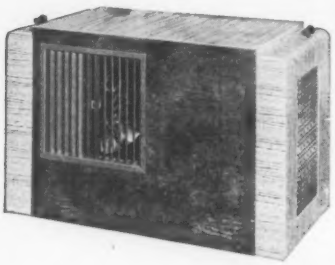
cation on all models; crankshafts and other moving parts are precision balanced and weight-checked to insure vibration-free performance. Most flanged joints, bolts, etc., are eliminated, adding to appearance and eliminating leak sources. Medium operating speeds—15-ton machine, for example, operates at 385 rpm for

capacities from 4.9 to 17.5 tons, depending on condensing and suction temperatures. Parts are interchangeable on all models of same size; system of cylinder "unloaders" available as optional equipment on all units over 5 tons.

Window Cooler • • • P-35

Product: Window model room cooler in two types, "X" and "Y."

Manufacturer: Kauffman Air



Conditioning Corp., St. Louis.

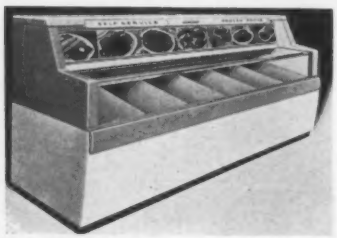
Features: Fits any window 21-in. wide or over. Simply plug into socket; no water connections necessary. Type Y designed to cool any room up to 1500 cu. ft. in size; Type X up to 2500 cu. ft. Cools, dehumidifies, circulates, and filters air. Just one switch to operate. Cleans and washes air by intimate contact with wet fin surfaces of coils and removable filter. Condensation automatically used up to increase capacity and efficiency of unit.

Frozen Food Case • • P-36

Product: Self-service frozen food display case.

Manufacturer: McCray Refrigerator Co., Kendallville, Ind.

Features: One of 37 new commercial refrigerators in McCray's 1947 line, this 8-ft. case is finished in two-



tone gray and white DuPont DuLux and porcelain, with gold band trim across the front. All-steel, welded-shell construction. Packaged "Kold-flo" refrigeration unit combines coils, cases, and compressor to provide exact control of temperature, humidity, and circulation.

Sectional Walk-In • • P-37

Product: "Reco-Fab" prefabricated, steel-clad, sectional low or

medium temperature walk-in coolers.

Manufacturer: Refrigeration Engineering Corp., Philadelphia.

Features: Rugged construction. Insulated with 6 inches of fibre glass. Engineered and constructed so that they can be moved or enlarged at any time with a minimum of effort and expense. Standard door panel may be

COMPARISON WILL PROVE IT'S BETTER!

Patent Pending

"The Seal of Approval"

Write for Stock and Price List. Learn how you can save by eliminating "call backs".

TEMPERATURE Control Devices

NEW HAVEN 15, CONNECTICUT

Eston Refrigerants Have These ADVANTAGES At No Extra Cost To You!

1 Lowest moisture content.

2 Individual cylinder tests and factory guarantees.

3 Banded cylinders for easy identification.

Blue band— SULPHUR DIOXIDE

Red band— METHYL CHLORIDE

Also— METHYLENE CHLORIDE and FREON 11 - 12 - 22 - 113

Eston Refrigerants are sold exclusively through recognized jobbers and distributors.

Formerly Pittsberg Chemical Co.

Eston CHEMICALS, INC.

3100 E. 26TH ST., LOS ANGELES 23, CALIF.

placed anywhere around the box, opening either to left or right. Insulated partition sections can be furnished to sectionalize cooler, with separate door for each section. Complete assembly drawings and instructions and an assembly tool are provided with each cooler.

Self-Flaring Fitting • • P-38

Product: "Uniflare" two-piece, self-flaring tube fitting, intended to combine the advantages of both compression and flared types.

Manufacturer: Brockway Co., Naugatuck, Conn.

Features: Plain-end tubing is inserted and the fitting tightened in the conventional manner. Nut, body, and thrust collar combine to produce the same action as an extrusion press. Thrust collar shears from the nut, acting as a dummy block and compression member to grip the tube and force it into a 37-degree flare. Nut acts as a ram, body of the fitting as a die. Fitting can be used with copper, aluminum, monel, plastic, and many varieties of steel.

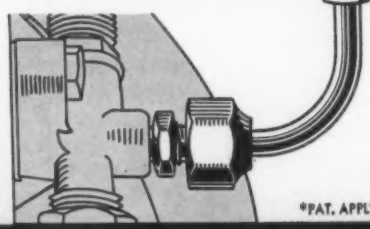
Is the System WET or DRY?
DON'T GUESS...KNOW!

DFN MOISTURE INDICATOR*
tells quickly...on the job, with laboratory accuracy

Quick . . . simple . . . low-cost method of detecting moisture in Freon and Methyl Chloride Systems

THE new DFN Moisture Indicator is a big time-and-money-saver on service calls—in the shop—on new installations. It tells quickly whether moisture is the cause of troubles and shutdowns—assures that a system is dry when you finish installation or servicing, to prevent call-backs.
The DFN Moisture Indicator is easily, quickly installed to gauge connection. The indicating cartridge (containing specially processed "Drierite") quickly tells the degree of moisture, if any. No need to shut down unit. Indicates accurately between 0° and 160° F. operating temperature. Packed in handy metal service kit. Ask your jobber for details—or write for literature and prices.

To KEEP systems dry, use DFN DEHYDRATORS
• 100% drying efficiency proved by repeated tests with DFN Moisture Indicator. Cartridge type—angle type—non-refillable type—hermetic system type.



*PAT. APPL'D FOR

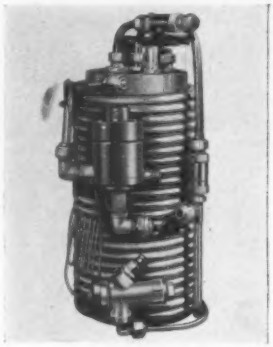
McINTIRE CONNECTOR CO.
Makers of DFN Dehydrators, Filters, Strainers
257 Jefferson St. Newark 5, N. J.

Cooler-Carbonator • • • P-39

Product: Completely automatic combination cooler-carbonator unit that cools plain water, carbonates at low temperatures, and dispenses both plain and carbonated water.

Manufacturer: Temprite Products Corp., Detroit.

Features: Operates on dual principle of absorption and diffusion. Delivers up to 220 gallons (5620 glasses) of highly carbonated water



cooled to a constant 40 F. from single 20-lb. cylinder of CO_2 gas. Requires less than 10 sq. in. base area and 15 inches vertical clearance. Operates independently of city water pressure.

Valve Block • • • P-40

Product: Service valve block.

Manufacturer: Kerotest Mfg. Co., Pittsburgh, Pa.

Features: Intended principally for self-contained low-temperature and commercial applications where it is difficult to maintain a clean, dry low side. Operation—one-half of service block is mounted to condensing unit and connected to outlet of receiver and suction side of compressor body; other half is connected to liquid metering device and outlet of evaporator. By this means both condensing unit and evaporator can be cleaned and dried at factory before final shipment and kept that way by closing the two valves in each half of service block. When unit is ready for final connection, two halves need only be joined together and valves opened. Complete block consists of two brass forgings bolted together, each having a suction and a liquid line valve and a gage connection.

SERVICE ON WHEELS . . .

Continued from page 36

"The row of boxes on the top shelf of the left side are cheese boxes, which just happen to fit into that space perfectly. In these I have separated a lot of items that are used a great deal, such as fuses, cord plugs, rubber and friction tape, flaring tools, bending springs, solder, flux, small Stillson wrenches, special screwdrivers, and similar items.

"On the right side I carry new parts such as expansion valves, dryers, controls, tubing, and my refrigerant drums and Prestolite torch. The top shelf was designed for storage of gallon oil cans. I planned the arrangement of these cabinets so that all the heaviest material would be at the front end.

Shelves Are Tipped

"All shelves are tipped slightly upward toward the outside, so that equipment will not work to the outside edge and fall out when the doors are opened. I find the lip of the pick-up body a handy place to lay jars of small screws or bolts, my electric drill, soldering irons, and many other items."

What does Mr. Hill think of his home-made service truck now that he has completed it and placed it into actual operation?

"Believe me," he declares enthusiastically, "the more I use it the more I like it. It saves me so much time, for it makes it easy for me to lay my hands on just the equipment I want when I want it. So far I haven't found any way in which I could improve the convenience of this layout."

FIRST FROZEN MEALS FOR NEW ORLEANS

Precooked frozen meals recently were introduced to New Orleans association of commerce officials, as the city reportedly became the first in the South and the second in the nation to have these products available in quantity. The frozen meals, prepared in New York by Maxson Food Systems and shipped to New Orleans by refrigerated express, cover 16 complete menus from filet mignon steaks to weiners and sauerkraut. Menu at the New Orleans luncheon-introduction consisted of turkey and dressing, green peas, and Louisiana yams.

ST. LOUIS DEALER IN NEW BUILDING

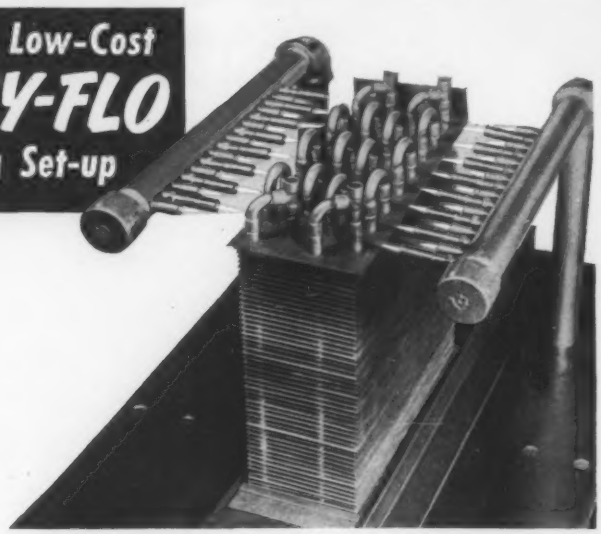
The new building of Better Homes Appliance Co. at 5910 Natural Bridge Ave., St. Louis, has been completed and the company is operating there under management of Joseph M. Kelly. The firm sells refrigerators, home freezers and appliances.

AN entertaining and instructive booklet on its company's suggestion system has just been published by The B. F. Goodrich Co., Akron, Ohio, and is now available upon request.

Titled "You've Got Something There," the 20 pages of the booklet are enlivened by a series of cartoon sketches which bring home the point discussed on each page. Text is brief and to the point. Need for suggestions to better operations is first discussed, and the benefits flowing from such suggestions described.

A review of the awards made during the last three years, is one of the features.

A Fast, Low-Cost EASY-FLO Brazing Set-up



32 LEAK-TIGHT JOINTS BRAZED IN 45 SECONDS!

With the simple set-up above, the 16 return bends of ⅜" copper are joined to the tubes of the refrigeration unit . . . all at one time . . . all automatically . . . all in 45 seconds.

HERE'S HOW IT'S DONE

Units are prepared for brazing as follows. Return bends are cleaned and fluxed and a ring of 3/64" EASY-FLO wire is inserted in each open end . . . bends are placed over the cleaned and fluxed tube ends of the unit . . . Assembly is then placed between the two rows of gas-air burners, with a flame aimed at each joint. The predetermined brazing time of 45 seconds is maintained by automatic control of the gas supply.

EASY-FLO—the patented low-temperature silver brazing alloy—is now widely used in the original manufacture of all kinds of refrigeration equipment, because it makes joints stronger than the metals joined, with the ductility to take all the vibration, shock and temperature changes the metals themselves can stand. It is especially suited for refrigeration work because it reliably makes joints that are 100% liquid and gas-tight and strongly resistant to corrosion. Also because EASY-FLO's low-working temperature is a safeguard against heat damage to light gauge metals. For these same reasons EASY-FLO is equally effective on refrigeration equipment installation, maintenance and repair.

WRITE FOR BULLETIN 12-A

It will give you full facts and reasons for the high-strength speed, reliability and economy of EASY-FLO brazing. A copy is yours for the asking. Ask also for details about the new EASY-FLO 45.

HANDY & HARMAN

HANDY & HARMAN ESTABLISHED IN THE U.S.A. 1867 QUALITY & SERVICE

82 FULTON ST., NEW YORK 7, N. Y.

Bridgeport, Conn. • Chicago, Ill. • Los Angeles, Cal. • Providence, R. I. • Toronto, Canada

CASH COMES IN . . .

Continued from page 38

it is necessary to enter *all* receipts in the cash receipts book and to deposit them in the bank. All disbursements should be made by check. A petty cash fund should be kept for small incidentals.

In the case of receipts where a discount has been allowed, the amount received is entered in column 1, the discount is shown in the second column and the gross amount (the check, plus discount) goes in column 3, 4, 5 or 6. Columns 1 and 2, therefore, *must* equal columns 3, 4, 5 and 6.

In the third column or accounts receivable "(accounts receivable" for our purposes is to be construed as *all* moneys collected for contracting activities) a space is provided for the job number, which should always be entered therein. If the account received is not an "accounts receivable", it should not be entered in column 3. If, for example, it is from the sale of over-the-counter stock items, column 4 or 5 may be headed up "store sales" or "retail sales" and the amount entered therein—otherwise enter it in column 6 with explanation, as in the case of scrap sales.

If cash is borrowed from the bank or some individual, the net amount received is always entered in the first column, the amount of the note is entered in the column headed "other receipts" and the explanation from whom it was received is placed in this column. The first column, "amounts received", is your debits to your bank account. Each time a bank deposit is made, add the items in the first column. The amounts entered equal your deposit. (It may be entered as a "memo" in the column on the extreme right. Since this column is a "memo only" it has no bearing on balancing the page.)

Always In Balance

The sheet is kept in balance at all times by adding each column and putting the totals in small pencil figures and then making sure that the total of columns 1 and 2 equals the total of columns 3, 4, 5 and 6. When the bottom of the page is reached, make sure the page is in balance by the foregoing method and forward all totals to the proper columns on the next page.

This simple procedure may be followed month in and month out until the end of the year, at which time the footings show your total income for the year (the double entry bookkeeper may prefer to post these footings to the ledger monthly).

Exhibit 1 shows some typical entries. As you have already noticed, one of the features of "accounting for contractors" is that each job or project is given a job number. All receipts from jobs (accounts receivable) are keyed with that number and should be entered to the credit side of the "job record" sheet keyed with this same number. (This is illustrated in the previous article dealing with "job records").

For example, referring again to Exhibit 1, we find that the first item is a sum of $500 received from E. L. Smith. This is entered in the first column "amount received". No discount was allowed the customer, so the same amount is entered in column 3 under "accounts receivable". This money was from Job No. 9, so that

LEAKPROOF
SOLDER
fittings
NIBCO
★ Dense, uniform structure.
★ Formed under hydraulic pressure.
★ Plug tested to assure close tolerances.
★ Stronger joints because they fit!
STAND high pressure high temperature
TESTS show NIBCO WROT Fittings will withstand tremendous pressures or temperatures. So accurately formed by NIBCO patented processes, they form stronger solder joints with copper tubing . . . joints that can't be pulled apart or spring leaks. Made in standard types and sizes in great variety.
Write for Catalog 614
NORTHERN INDIANA BRASS COMPANY
ELKHART, INDIANA
NIBCO WROT Copper FITTINGS

is indicated in the column provided for that purpose. (After this entry is made, the $500 from column 3 should be posted to the credit side of the sheet on "job record" sheet No. 9).

You will notice that the second entry pertaining to accounts receivable is from M & L Realty Co., which pays a bill of $5,000 but is allowed a cash discount of $100. Therefore, the net amount received is entered in column 1 ($4900), the $100 cash discount is entered in column 2, and in column 3 the full amount of the bill which is $5,000. This amount is from Job. No. 8, as is shown in the "Job No." column and the $5,000 is, of course, to be posted to the credit side of the sheet on "job record" sheet No. 8.

The third entry is similar to the first one and is handled in the same manner. It pertains to Job No. 10.

The fourth entry indicates that $3.60 was received from H & H Salvage Co. The credit is entered in column 6 and the explanation that the amount received was "from sale of scrap".

The fifth entry shown indicates that $7500 was borrowed from the bank.

Over at the right hand side of the page in column 6 the credit is entered, which is $7500. In the "explanation" column it is shown that this was a loan on a 60-day note.

Entry for Interest

Had this been a case where a $7500 loan was negotiated and the discount taken off before the bank credited your account, the net amount *only* would have been the amount shown in column 1. $7500 would still be the amount entered in column 6 and an entry for the interest, or discount, would in that case have been made in column 6 by entering it in red ink or black ink with a circle around it to indicate it as a debit. (Such red ink or circled figures would be *subtracted* when adding the column.)

These typical entries illustrate practically all types of entries pertaining to cash receipts. It should be borne in mind that columns 1 and 2 are the "debit" columns and all other columns are "credit" columns; that each time a debit or credit is made a corresponding credit or debit entry must be made to balance—therefore the totals of columns 1 and 2 will always be equal to the totals of all the other columns. If your sheet is in balance your debits are equal to your credits.

The double entry bookkeeper or accountant may foot his books and enter the totals to his general ledger each month. When the books are kept in simple form and no ledger maintained, the footings are balanced across and then carried forward to the top of each new page for the entire year. Thus at the end of the year your totals will reflect the total cash receipts for the year. The totals in column 3 will reflect the amount of money you have received from your contracting business, and if you maintain a store and have retail sales or other types of income, columns should be headed up to show you that total.

Any recognized method of keeping an "accounts receivable" record is o.k. A simple and effective way is to keep a duplicate copy of all invoices rendered. File them alphabetically and refer to them often. Record all partial payments on your carbon copy and when it is "paid in full" remove it to a "paid" file.

This is the fourth of six articles on a system of accounting for contractors. If you would like any additional information, drop us a postcard or letter and we'll be glad to see that you get it.—the Editors.

Double Feature!

TODAY AND EVERY DAY

THAWZONE
PATENTED
The PIONEER FLUID DEHYDRANT

1. New or reconditioned units, before starting up, should have THAWZONE to destroy those tiny amounts of moisture that even careful workmanship cannot always avoid, and to prevent future trouble.

2. Systems now operating perfectly need THAWZONE now to prevent future moisture. It's economical insurance.

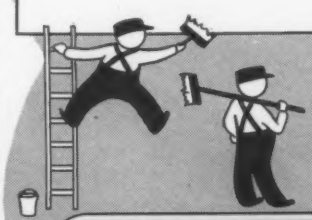
3. Units kicking up from moisture have been treated with THAWZONE by engineers for eight years. It's still good practice.

TRACE
REFRIGERANT LEAK DETECTOR

Add TRACE at any time to any refrigeration unit containing any refrigerant to:
1. Find present leaks.
2. Spot future leaks.
3. Locate the source (leaks) of moisture troubles.

TRACE has that vivid, stay-red color. It's manufactured by chemists with long experience in refrigeration, who understand the special and exacting requirements that must be met by any additive to a refrigeration system.

. . . and we haven't raised our prices!



HIGHSIDE CHEMICALS CO.
195 VERONA AVE. NEWARK 4, N. J.

LARKIN COILS

Refrigeration Products

Coils for Refrigeration
Coils for Air Conditioning
Air Conditioning Units
Humi-Temp Forced Convection Units
Polished Aluminum Disseminator Pans
Steel Plate Coils
Evaporative Condensers
Industrial Coolers
Water Coolers

LARKIN COILS
519 Memorial Dr., S. E.
ATLANTA, GA.

WHAT'S NEW . . .

Continued from page 41

play of **Clarage Fan Co.,** which also included samples of the company's line of air conditioning fans and air washers.

In addition to its regular line of filters and odor adsorbers, **W. B. Connor Engineering Corp.** showed its "Kno-Draft" adjustable air diffuser, with an operating display to illustrate the damper action of this unit.

Featured in the booth of **Curtis Refrigerating Machine Division,** Curtis Mfg. Co., were a 10-hp central type air conditioner; a 5-ton packaged air conditioner; and a 10-hp water cooled shell and tube condensing unit. A cutaway model of a Curtis compressor demonstrated its pressure lubricating system.

Dayton Rubber Mfg. Co. highlighted its V-belt drives with an operating display. Background of the booth featured an illuminated diagram showing belt construction.

Detroit Lubricator Co. showed control equipment for refrigeration and air conditioning and gas and oil heating. Refrigeration accessories shown included pressure and temperature controls, solenoid valves and expansion valves.

Drayer-Hanson, Inc., Los Angeles manufacturer of a complete line of heat transmission products, showed only its "Airtopia" unit, a completely automatic, self contained, year around air conditioning unit designed to cool, heat, humidify, dehumidify, filter, and circulate air.

Emerson Electric Mfg. Co. displayed its fractional horsepower motors from 1/20 to 1/3 hp in capacity, and fans for both domestic and commercial applications. Both motors and fans were demonstrated by operating displays.

Farr Co., manufacturing engineering firm from Los Angeles, showed its line of filters for air cooling and humidifying equipment, pointing up their efficiency with an operating display.

Fedders-Quigan Corp.'s display at the Show was devoted entirely to heating, with models of its Series 12 and Series 15 unit heaters. Cards were available for those who wanted information on window and console unit air conditioners as soon as it is available.

Frick Co. displayed no equipment in its booth, which was decorated with large-scale photographs on the backdrop.

Thermostats, humidistats, and limit switches for air conditioning applications were among the products displayed by **Friez Instrument Division,** Bendix Aviation Corp.

Fulton Sylphon Co. showed its line of temperature regulators for the control of liquids, air, or gases; also

Make light fast work of moving heavy appliances!

Model 229
Complete with 2 12 ft. straps

REFRIGERATOR TRUCK

4 OUTSTANDING FEATURES

- √ *12" Pneumatic Tires*
- √ *Welded, Tubular Steel Frame*
- √ *Roller or Ball bearing wheels*
- √ *Padded strips on front of frame, prevent marring appliances*

Manufactured By

MOELLENBROCK & WILKE
DEPT. R3 WASHINGTON, MISSOURI

on display were representative samples of the company's line of bellows and valves.

General Controls Co. showed typical models of its refrigeration valves and strainers, heating and gas controls, industrial valves and hi-g controls for aircraft and portable use.

General Electric Co.'s exhibit consisted of representative models of its fractional horsepower motors and air conditioning controls.

General Engineering & Mfg. Co.'s "Gemco" packaged air conditioner with two-stage compressor unit was shown by the company's Cleveland distributor, Domestic Heat & Engineering Co.

Henry Valve Co. displayed its new solenoid, ammonia solenoid and check valves, and new magnetic switch for pressure vessels. Besides these were displayed packed and packless valves, improved designs of refrigeration strainers, dryers and relief valves; and various other automatic control devices.

Models of its 3, 5, and 7-ton "Typhoon Prop-R-Temp" self-contained air conditioning units were displayed by **Ice Air Conditioning Co., Inc.**

Imperial Brass Mfg. Co. exhibited refrigeration valves and tube fittings, refrigerant dehydrators and filters, shut-off and saddle valves, tube fittings and working tools and welding and soldering equipment. Centerpiece of the display was the recently-introduced "DiaSeal" valve.

Insul-Wool Insulation Corp. showed samples of its insulating materials designed for use in locker plants, cold storage and air conditioning applications. Insul-Wool is a fibrous material of the "fill" type, processed from wood pulp and treated for fire, moisture and vermin resistance. In 4-in. thickness, it is said to have a thermal conductivity of 0.67 Btu.

Johns-Manville Corp. displayed its full line of asbestos and rock wool insulating materials, emphasis being on applications in the home insulation field.

Kauffman Air Conditioning Corp. showed its ¾-ton open-type portable room cooler and its ½-ton closed-type window cooler.

Lau Blower Co. featured its new postwar blower, a packaged unit of the 400-A series. This unit is offered in a complete range of sizes.

Jas. P. Marsh Corp. showed gauges, thermometers, steam and hot water heating specialties, and the "Tri-trol" regulator, basically a thermostat which automatically changes the rate of heating of a building and the hours of heating according to outside temperature changes and needs of building occupants.

McCord Corp.'s display at the Show was devoted to its vertical projection type unit heaters for industrial and commercial applications.

Displayed by **McQuay, Inc.** were both floor and suspended models of its year around air conditioner; a

LOW TEMPERATURE DEFROSTING

as Automatic as clockwork

THERMOBANK EVAPORATOR IN FREEZER ROOM OF A PACKING PLANT

THERMOBANK

. . . requires no attention

Defrosting is completely automatic and on a time schedule. No hand valves need be opened or closed; no coils need be scraped; no goods need be removed.

. . . Maintains peak efficiency

Never loaded with frost, coils operate at peak efficiency always. Power is saved. Temperature fluctuations are minimized.

HOW IT WORKS—The THERMOBANK System consists essentially of a forced convection cooling unit, time controls and a heat reservoir. A portion of the heat extracted during the refrigeration cycle is "Banked" in the reservoir from which it is released to the refrigerant during the defrost cycle.

SEND FOR BULLETIN TV345RI

2

HEAT TRANSFER EQUIPMENT

KRAMER-TRENTON Co.

TRENTON 5 NEW JERSEY

CALL-BACKS

WITH GRUNOW CARRENE METERS

It is false economy *4 out of 5 times* to install an ordinary dehydrator. Genuine Grunow Meters have *built-in* dehydrator cans. Single seal of brazed phosphorous copper. Entire meter flow-tested. 50,000 in past five years. Satisfy your customers on the first call and have extra time for *increased* service profits!

• Write for Service Manual and name of nearest Distributor

Grunow

AUTHORIZED SERVICE, INC.

4321 W. Fullerton Avenue, Chicago, Illinois

suspended propeller type comfort cooler; a combination cooling and heating coil; and a water coil for cooling or heating applications.

The **Minneapolis-Honeywell Regulator Co.** display was primarily a peek into the future, showing a completely electronic air conditioning control system, much of which is not yet in production. Also shown was a new air conditioning register of the D500A series.

Mercoid Corp. displayed representative items from its complete line of refrigeration valves, switches, and controls.

Morrison Products, Inc., showed representative sizes of its line of "Airstream" blower wheels.

Representative sizes and styles of "Streamline" copper fittings comprised the display of **Mueller Brass Co.**

Mystik Adhesive Products exhibited the possible applications of its "Mystik" Dri-Pipe adhesive pipe covering in the air conditioning and heating fields.

Niagara Blower Co. showed its new bantam Aeropass condenser, its larger-size Aeropass unit, its "No-Frost" defrost system with liquid concentrator, sprayer cooler, fan heater, liquid cooler, and type "C" air conditioner.

Owens-Corning Fiberglass Corp.'s exhibit at the Show was devoted to a display of its "Dustop" air filters and industrial and equipment insulation materials.

Pacific Mfg. Co. displayed its room size air conditioner unit, which created considerable attention. The unit, designed for window mounting, is now available in dark walnut finish, blond mahogany finish, plain ivory and sanitary white.

Paragon Electric Co.'s featured product was its new Series AF attic fan timer, just introduced and priced at $9.75. Also shown were seven-day calendar dial time switches.

Penn Electric Switch Co. centered interest in its display around a new room thermostat, asking visitors to vote on its design as well as the type of finish preferred. The Penn display covered line and voltage room thermostats, limit controls, stack switches, stoker timer relays, a day-night clock, temperature and pressure refrigeration controls, water and solenoid valves and humidistats.

Perfex Corp. concentrated its display on its line of heating controls, featuring controls for oil burners, gas burners, stokers and industrial applications.

Redmond Co., Inc. displayed its line of "Micromotors", and spotlighted their sealed design with a display comprised of one of these motors operating under water in a goldfish bowl.

Research Products Corp. featured its No. 200 Series of refillable, self-sealing, wire grid air filters with changeable filter pads. Also shown were the 900 Series filters, made of washable "Alumaloy" expanded foil, for central station air conditioning systems. Unique attraction at this booth was the "Filter Watchman", a

NU-COIL

(CONCENTRATED)

COIL CLEANER

NO OBJECTIONAL ODOR

UTMOST IN LABOR SAVING

-

CAN BE USED OVER REPEATEDLY

OFTEN IMITATED

IS SIMPLE TO APPLY

LET YOUR REFRIGERATION WHOLESALER EXPLAIN— NOW

SKASOL CORPORATION

114 GLENCOE AVE. WEBSTER GROVES 19, MISSOURI

signaling device designed to indicate when a filter becomes operatively ineffective. This device is not in production.

Rome-Turney Radiator Co. showed samples of its helical fin tubing, water cooled condenser coils, water cooled condensers, and air cooling coils of both well water and direct expansion types.

Spencer Thermostat Co. displayed "Klixon" thermo-snap built-in temperature controls, motor protectors and circuit breakers.

The "Precipitron" electronic air cleaner drew most of the attention in the booth occupied by the **Sturtevant Division** of Westinghouse Electric Corp. Also shown were a water coil, a cutaway model of a 15-ton hermetic compressor, and an SU-31 3-ton packaged air conditioner.

Temp-Control, Inc., distributor, exhibited several models of Jaden air conditioning equipment, manufactured by Jaden Mfg. Co., Hastings, Neb. The units are designed for use with cold water as the cooling medium.

The Trane Co. had on display typical models of its reciprocating compressors, cooling and heating coils, self-contained air conditioner, evaporative condensers, heat exchangers, unit heaters and convector-radiators.

Torrington Mfg. Co. featured in its exhibit various models of "Aristocrat" propeller fan blades and "Airotor" blower wheels.

The display of **Tuttle & Bailey, Inc.** featured its new "Tri-Flex" grilles for three-way control of air delivery, and the new "Aerofuse" damper said to provide minute adjustment of air volume.

United States Air Conditioning Corp. featured in its display its newly designed "usAIRco" unit heater with the "Deflecto-Grille" feature. Also shown were a 3-ton refrigerated "Kooleraire", a room ventilator, blower unit, unit air conditioner and a blast heat coil.

Viking Mfg. Corp. displayed in its Show space a model 1010 commercial reach-in of 20.3 cu. ft. capacity, a ¾ hp window type room cooler, a model 0-30 year around air conditioner using a 3 hp unit, and one model of its condensing unit line.

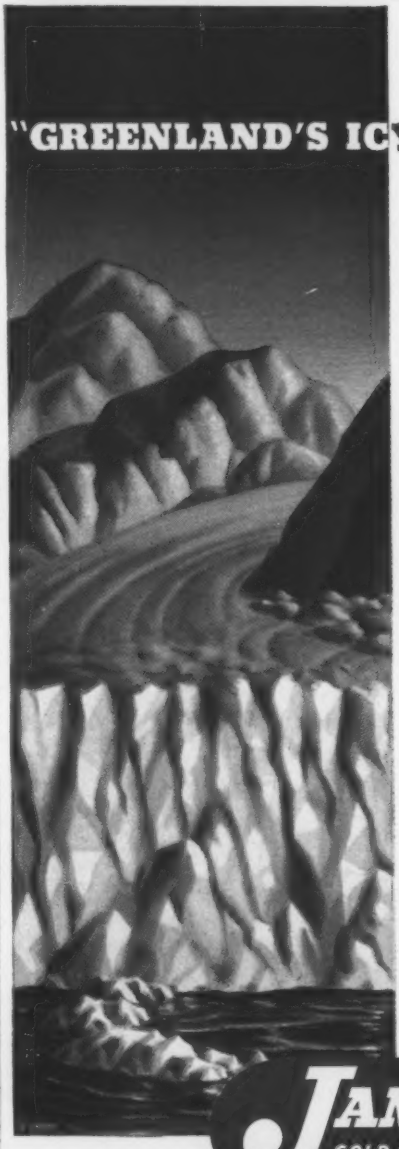
Blowers and humidifiers were displayed by **Viking Air Conditioning Corp.** An operating display indicated the noise level on one of the fan units.

White-Rodgers Electric Co. exhibited a complete line of automatic controls for both heating and air conditioning, along with refrigeration temperature and pressure controls.

Wilson & Co., Inc., hair filter division, showed its air filters for warm-air heating and air conditioning systems. The filter is made of natural animal hair, and has the trade name "Spider-Web".

"Trufin" integral finned tubing was featured in the booth of the **Wolverine Tube Division,** Calumet & Hec-

Continued on page 83

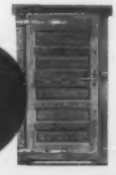


"GREENLAND'S ICY MOUNTAINS"

Prodigal Nature has provided Greenland with an unbroken ice-cap glacier more than 1000 feet thick. The icebergs loosed by its fiords on the North Atlantic would meet the world's refrigerating needs . . . if they could be practically utilized.

As it is, artificial refrigeration must be used. If the openings of refrigerated spaces are not properly sealed, contents are jeopardized and operating costs mount. For nearly half a century, Jamison Cold Storage Doors have satisfactorily solved this problem on thousands of efficient, economically operated installations throughout the civilized world.

The Jamison standard line . . . Jamison, Stevenson, Victor, and NoEqual Doors and related products . . . embraces a wide range of models tailored to most of the requirements of the refrigeration industry. Doors of special design and construction will be built on order. For full information about Jamison Doors for your specific needs . . . and address of nearest branch . . . write Jamison Cold Storage Door Company, Hagerstown, Maryland.



JAMISON
COLD STORAGE DOORS

Branches in Principal Cities, Coast to Coast

CONTRACTORS

News • Activities • Plans

While *The Refrigeration Industry* is *not* the official publication of the National Association of Refrigeration Contractors, the Editors assign this space each month to the association. The information below is furnished, for the most part, by the offices of the association and its local affiliates.

CELEBRATE NARC'S FIRST BIRTHDAY

The Refrigeration Contractors Association of Northwestern Ohio, with headquarters in Toledo, held its most enthusiastic and best attended meeting since its recent organization and affiliation with the National Association of Refrigeration Contractors.

Twenty-eight refrigeration contractors turned out to a dinner meeting in the Kin Wa Low restaurant, Toledo, to hear a talk by Ed Wright of Youngstown, NARC first vice-president.

Mr. Wright described the many pitfalls besetting contractors and stressed the point that now, for the first time in the history of this fast-growing industry, the contractors had their own trade association with a membership limited strictly to refrigeration contractors. They were now recognized as an important segment of the industry by the other industry groups and by governmental agencies.

Since NARC was just one year old at the time of this Toledo meeting, Mr. Wright told how a handful of contractors had organized NARC; and how their hopes were more than justified by a present membership of over 800 in 175 cities in 38 of the 48 states.

He described NARC's efforts on the Freon and small motor shortages; progress on unfair trade practices, reports of which are now with the Federal Trade Commission in Washington, D. C.; compilation of information and assistance given on labor relations, codes and licensing; and of work being done on industry statistics, organization of local associations, collection of business operating forms, and other measures.

He said that this year aggressive efforts will be made to get refrigeration contractors in the various cities to get together and stay together through regular monthly meetings.

Paul Sizer, president of the northwestern Ohio association, presided. These Ohio cities were represented in the attendance: Clyde, Delta, Findlay, Fremont, and Toledo. Monroe, Mich., also was represented.

NARC A MEMBER OF 2 INDUSTRY GROUPS

National Association of Refrigeration Contractors has recently become a member of two industry groups: the Construction Industry Advisory Council and the Refrigeration Industry Council.

The first-named association is comprised of a number of national organizations interested in construction and installation work, whose purpose is to give common voice, nationally, in protecting the interests of such work. The Construction Industry Advisory Council is sponsored by the Chamber of Commerce of the United States, Washington, D. C.

The Refrigeration Industry Council is a permanent, cooperating committee of four industry associations: NARC, Rema, Rewa, and RSES, purpose of which is to discuss and endeavor to solve problems of industry-wide scope. Rema's president, H. F. Spoehrer, is chairman; NARC representatives are Warren W. Farr, E. S. Wright and F. J. Zoppel.

WISCONSIN CONTRACTORS ELECT E. F. ANDERSON

Newly-elected 1947 officers for the Refrigeration Contractors Association of Wisconsin are E. F. Anderson, president; Otto Braun, vice-president; Fred Boehme, secretary; Henry Rozga, treasurer.

The association, with headquarters in Milwaukee, recently launched a membership drive. The main speaker and drive spearhead was E. S. Wright of Youngstown, first vice-president of the National Association of Refrigeration Contractors. 14 new members were added, making a total of 25.

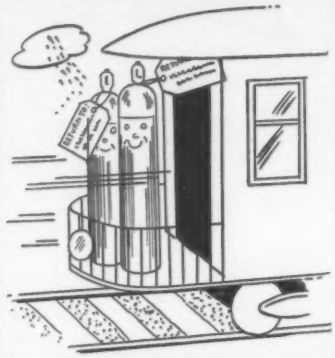
An assortment of brushes for the most popular makes of refrigerator motors—strong metal edge box with individual removable compartments—brushes easily removed —36 sets of popular brushes will service 90% of refrigerator motors.

PURE

PURE CARBON COMPANY

449 HALL AVENUE ST. MARYS, PA.

YOU can help to prevent a shortage of refrigerants next summer by seeing that all empty cylinders in your possession—or that you know of—are returned to the



manufacturers promptly for refilling.

All manufacturers of refrigerants have new steel cylinders on order, but deliveries have been delayed and may drag on for several months. Consequently, it's very important to keep those old cylinders "working."

Round up those empties, and start them on their way back "home." You'll be glad you did, when summer comes!

COOLING SESSION SET FOR POWER MEETINGS

A session of the Midwest Power Conference on the morning of April 1 has been set aside for a discussion of "Developments in Air Conditioning." William Goodman, Illinois Institute of Technology, will be chairman of the session. Speakers will be A. B. Newton, chief engineer of Airtemp Division, Chrysler Corp., on "Compressors for Air Conditioning," and John Hertzler, vice president of York Corp., on "Postwar Air Conditioning Advances."

The conference, sponsored by Illinois Institute of Technology with the cooperation of nine midwestern universities and the Chicago sections of a number of technical societies, is expected to attract some 2500 engineers. It will run from March 31 through April 2.

NEW ARMSTRONG FIELD MEN

Seven members of Armstrong Cork Co.'s building materials division sales training class have completed their course in industrial products and have been assigned to offices throughout the country. J. R. Fitzpatrick, Jr. has been assigned to the Los Angeles office; D. C. Greenwood to Hartford, Conn.; R. C. Hannam to Atlanta; R. H. Horning to Chicago; J. P. Sawyer, Jr. to Detroit; R. F. Stone to Philadelphia; and J. S. Taylor to Cleveland.

TAMPA COMMERCIAL SALES GROUP FORMED

A Tampa (Fla.) chapter of the Commercial Refrigerator Sales Association was organized at a luncheon meeting at Rubin's Restaurant recently, H. B. Adams, of Tampa, is president. George B. Herman, of Minneapolis, Minn., national president, was principal speaker.

YORK NAMES SHUMAN

The Shuman Co., 1216 W. Tremont Ave., Charlotte, N. C., has been appointed distributor for York refrigeration and air conditioning equipment, including room coolers and frozen food cabinets, in the counties of Cleveland, Gaston, Mecklenburg, Cabarrus, Union, Anson and Richmond, N. C., and York county, S. C.

CHICAGO SEALS

LAPPED TO MILLIONTHS OF AN INCH

Skilled workmen using special precision tools insure the flat surfaces that give Chicago Seals maximum quality and long life.

SOLD THROUGH REFRIGERATION WHOLESALERS

FOR BETTER PERFORMANCE USE

CHICAGO VALVE PLATES

PERFECT BALANCE

Chicago Seals MODERN DESIGN

CHICAGO SEALS

CHICAGO SEAL CO. 20 N. WACKER DR., CHICAGO 6, ILL.

MARVEL

Dry Beverage COOLER

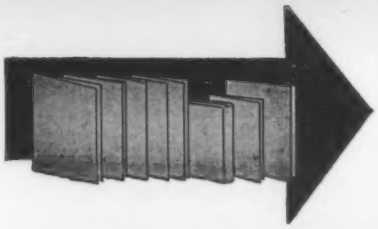
39 in. high
30 in. wide
6, 8 or 10 feet long

Beautiful stainless steel and polished aluminum outside with polished aluminum interior. Heavy duty fin-type coils give fast cooling and less frosting. Rugged construction, first quality materials. Stainless steel lids slide away or lift out. 8-inch utility shelf. Removable dividers inside. Toe space under edges.

Immediate Delivery | *Dealers Wanted*

W. ALLEN ROGERS Industries

Box 272-RI Demopolis, Ala.



Useful Literature

The publications listed below are available to readers without charge. Simply list on the postcard provided in this issue the numbers of the items you wish to receive, and send it to THE REFRIGERATION INDUSTRY, 1240 Ontario Street, Cleveland 13, Ohio. Your requests will then be forwarded directly to the companies concerned.

125—Evaporators . . . A four-page folder describing and illustrating construction features of the line of stainless steel evaporators and ice cube makers manufactured by Standard Refrigeration Co. Specifications are listed.

126—Automatic Controls . . . A 52-page catalog (52-C) illustrating the complete line of automatic pressure, temperature, and flow controls offered by General Controls Co. Contains complete engineering data, including operating pressures and list prices.

127—Decalcomanias . . . A four-color brochure illustrating and giving information on the line of "slide-off" decals for nameplates, operating instructions, etc. Available from Palm Bros. Decalcomania Co.

128—Cooling Units . . . A profusely illustrated catalog (CD48) containing complete information on and latest list prices of the line of cooling units manufactured by Tenney Engineering, Inc. Includes detailed specifications on unit coolers, ice makers, and various types of coils.

129—Radius Dresser . . . A folder illustrating and describing the "Easy-Set" grinding wheel radius dresser made by Universal Vise & Tool Co. Diagrams show its use and operation.

130—Fittings, Valves, Tools . . . Over 1100 sizes, types, and styles of tube, hose, and pipe fittings and shut-off valves are listed and described in a catalog just issued by Imperial Brass Mfg. Co. A selector chart shows five of the most popular types of fittings and gives applications, advantages, and methods of assembly. A variety of cutting, flaring, bending, and other tools also are listed.

131—Food Freezer . . . A broadside describing, illustrating, and listing complete specifications of the Model S2F-14 vertical, shelftype home freezer manufactured by Ben Bar Sales, Inc.

132—Hand Spring Winder . . . A folder illustrating and describing several models of the "Universal" hand spring winder manufactured by Blaner Mfg. Co. Operating instructions also are included.

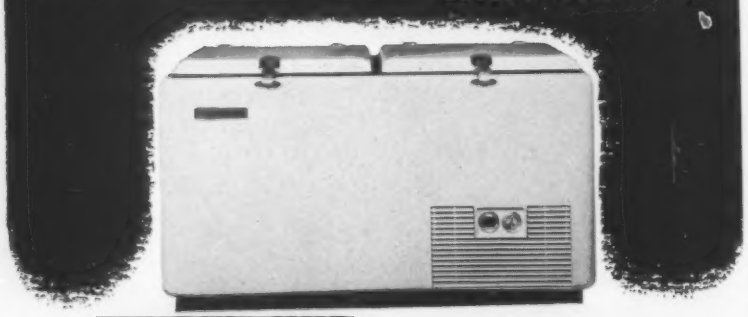
133—Home Freezer . . . A four-page folder illustrating and listing specifications of two models of the stainless steel home and farm freezer produced by Beatty Mfg. Co.

Frozen Foods . . . A new 32-page instruction booklet entitled "Frozen Foods—How to Prepare, Package, Freeze, and Cook" is available at 3 *cents per copy* by writing directly to the General Electric Consumers Institute, 1285 Boston Ave., Bridgeport 2, Conn. Profusely illustrated, this booklet gives complete information on the preparation and use of frozen foods, including numerous tables designed to simplify the freezing and cooking processes.

NEW DISTRIBUTOR

W. T. Shackleford Co., 393 Peachtree St., Atlanta, Ga., has been appointed distributor in the Georgia territory for the Quillen "Home-Freez" manufactured by Quillen Bros. Refrigerator Co.

LOOMING *BIG* IN THE MODERN AMERICAN LIVING SCENE....



. . *The* BEN-HUR

Farm & Home Freezer

Engineered and designed to bring the health-building benefits of fresh-frozen foods to the American family. Hundreds of thousands of new homes now planned and building are present prospects for a generous-size, dependable, quality-built BEN-HUR Farm and Home Freezer.

Service-wise dealers, anticipating increased customer good-will and confidence will feature and recommend the new "BEN-HUR" for these "Stand-Out" Quality Features.

- All Steel Construction
- Lifetime Tested
- All Food Surrounded by Cold
- A Size for Every Family
- Thick Insulation (Hermetically Sealed)
- Modern, Smart Design
- Economy-Engineered

BEN-HUR MFG. CO.
Continuous Manufacturing Since 1911
Dept. R. 634 E. Keefe Ave., Milwaukee 12, Wis.

BEN-HUR FARM & HOME FREEZERS

Right down the old alley...

You're really rolling 'em in, when you get the refrigeration part *made* for the job—by ordering genuine *Kelvinator*-made parts from your nearest Kelvinator parts depot.

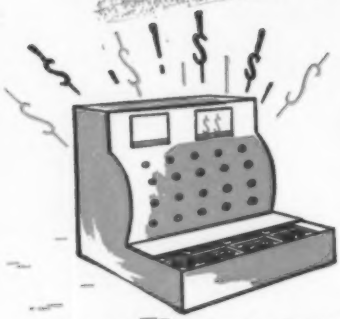
For every Kelvinator-made *part* is produced with the same skill—and to the same high standards—as the Kelvinator *complete units* which through 30 years have come to stand for quality in refrigeration products.

DIVISION OF NASH-KELVINATOR CORPORATION
Detroit, Michigan

Kelvinator

CONDENSING UNITS OPEN AND SEALED

THE RIGHT LINE OF *Compressor Oils*



MAKES SWEET MUSIC

Feature Texaco Capella Oils! They bring many a call for encores — assure repeat orders, increased business, more profits — make sweet-sounding music on your cash register you'll never weary of hearing.

MEETS ALL CONDITIONS

Texaco Capella Oils have what it takes to assure dependable, economical operation of all types and sizes of compressors. They come in a complete line of viscosities, are highly stable, moisture-free, do not react with refrigerants — have very low pour tests and resist gumming and sludging.

WINS APPROVAL

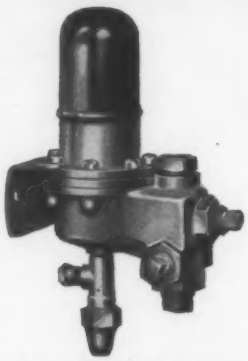
Texaco Capella Oils win complete approval — from leading makers of air conditioning and refrigerating units, to distributors, dealers and service engineers. They come in attractive, *resealable* 1-qt., 1-gal. and 5-gal. containers ideal for window and counter displays — designed for keeping unused oil in proper condition indefinitely.

PROMPT DELIVERY OF TEXACO CAPELLA OILS through your regular jobber or dealer. For information, call the nearest of the more than 2300 Texaco distributing plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO
Capella Oils
For all Air Conditioning and Refrigerating Equipment

Tune in . . . TEXACO STAR THEATRE presents the NEW EDDIE BRACKEN SHOW every Sunday night. Metropolitan Opera broadcasts every Saturday afternoon.

AMINCO
Snap Action Valves
For Multiple Temperature



Used with systems having more than one coil, operates from same compressor. . . . Adjustable from 20" of vacuum to 63 lbs. pressure. . . . Differential 7 lbs. min. to 29 lbs. max. . . . Free from bellows strain. . . . Used with any refrigerant except ammonia. . . . For flooded as well as dry gas types or any combination. . . . A proven performer.

AMERICAN INJECTOR CO.
1431 - 14th AVE. DETROIT 16, MICH.
Van D. Clothier, 1015 E. 16th, Los Angeles
G. I. Boone, Rm. 739, 1775 Broadway, N. Y.
J. C. Battise; 504 Bondi Bldg., Galesburg, Ill.
W. H. Cody, Santa Fe Bldg., Dallas, Texas
Export: Borg-Warner, 310 So. Mich., Chicago

Says GASKET JOE

COMPRESSORS FIXED, THE SEALS ARE TIGHT, ANOTHER BOX IS ALMOST RIGHT. AND YET, MY FRIENDS, THERE'S SOMETHING MORE. BEFORE YOU'RE SURE YOUR JOB IS PAT YOU'VE GOT TO TAKE A GANDER AT THE GASKET ON THE COOLER DOOR.
ARROW PRODUCTS
420 N. LA SALLE ST., CHICAGO 10, ILLINOIS

THE PRACTICAL Refrigeration Engineering MANUAL

. . . by Harold Smith

XV. Storing and Dispensing Beverages

PART IV

THERE are two general ranges of temperatures involved, the low temperatures for ice cream storage of 0 F. average and the moderate water and food temperatures ranging between 40 and 50 F.

Several engineering methods can be used to meet these requirements. Sometimes completely separate refrigeration circuits are installed and operated by separate condensing units. Usually, however, one main circuit is used with branch circuits employing the use of two temperature control valves to provide the proper temperatures as needed.

In some systems cooling of the syrups is accomplished by running the suction lines from the ice cream compartment through the syrup compartment. This method satisfactorily cools the syrups and also acts as a dryer coil or heat exchanger for the low temperature suction gas returning from the ice cream storage compartment.

Soda fountains are carefully designed and well insulated. Evaporators are selected to handle the work and load requirements, for each storage compartment. If proper adjustments for temperatures are carefully made, highly satisfactory results will follow.

XVI. Storing and Dispensing Ice Cream

PART I

ICE CREAM is one of the most popular of all dairy products and is used extensively as a food and as a delicacy. Today ice cream is sold wherever people congregate.

Some years ago it was principally a summer food, but today it is consumed in large quantities in all seasons of the year. Restaurants serve it regularly as a dessert. Confectioneries and drug stores dispense large quantities day in and day out. It is sold in packages by drug stores, department stores, groceries and through many other outlets.

The present-day wide distribution of ice cream is made possible through the use of the ice cream cabinet. The heavily insulated cabinet is used to store ice cream, either in package form or in bulk cans, for an indefinite period until sold.

The development of the mechanically refrigerated ice cream cabinet marked the beginning of the wide distribution of this product.

Manufacturers of ice cream frequently purchase large quantities of these cabinets and place them in stores for dispensing purposes. The cabinet, in such cases, usually remains the property of the ice cream manufacturer, and the manufacturer is required to employ refrigeration trained mechanics to install, service and repair these cabinets as the need develops.

Ice cream cabinets usually are insulated with from 3 to 4 inches of good insulation. The insulation materials are heavily treated with asphalt or another moisture-proof preparation to control moisture within the cabinet.

The temperature within the

NEW R.S.E.S. CHAPTER IN WEST PALM BEACH

Organization of the West Palm Beach (Fla.) chapter of R.S.E.S. and election of officers to serve until the first annual elections are held in June has been announced by L. W. Rickards, secretary-treasurer. Seventeen members are in the group. Other officers are: H. E. Cox, president; E. C. Freeman, vice president; Charles Rigby, sergeant-at-arms.

GOOD COOLING FIELD

The magazine *American Hairdresser* says there are now 122,114 beauty shops in the United States at present. According to Edison Electric Institute estimates, only 4% of the U.S. business places in this category are equipped with air conditioning. Look around . . . perhaps one or more of the 115,000 shops included in the "unsaturated" 96% is in your neighborhood.

cabinet is usually held from minus 10 to 0 F. and occasionally slightly higher, but never over plus 5 F. Above this point, the ice cream begins to get soft and to settle, resulting in a less attractive product to offer the customer and also in a shrinkage of actual volume, since the air whipped into the ice cream when manufactured (which is called overrun) begins to escape, allowing the cream to settle and lose weight.

THEY HAVE TO BE GOOD

As ice cream is highly perishable and will melt rapidly when temperatures rise above 8 to 10 F, great care must be taken to be sure that each installation is mechanically correct when installed. Also, when service is required, prompt action is necessary to protect the product.

Although the temperatures required for ice cream storage are low, the refrigeration engineering problems as a rule are considered relatively simple and easy to control.

Good, heavy insulation, well protected against moisture, is very important. This insures a slow rise in temperature if mechanical trouble develops, and also provides relatively low operating costs during hot weather.

INSULATION IMPORTANT

It is usually very unsatisfactory to attempt to use a poorly insulated cabinet for ice cream storage or other low temperature applications. Sometimes it is attempted, but in such cases larger condensing units are required, much higher operating expense is incurred, and much difficulty is experienced in holding a close temperature range.

The modern ice cream cabinet uses an evaporator constructed from plate coils, frequently made up to form the inside lining of the cabinet. Sometimes, however, bare pipe coils are attached to the lining between the lining and the insulation.

Early ice cream cabinets employed a double lining in which brine was used. A coil or boiler was set in the brine bath to cool the brine, which in turn kept the walls of the cabinet cold.

BRINE TANKS COSTLY

The use of brine tanks has disappeared almost universally, as this method was more expensive to operate, made the cabinets much heavier in weight, and caused considerably more service work because numerous leaks in the tanks were the rule after the cabinets were in use for an extended period.

Repairs were usually both extensive and expensive and required a lot of work to properly take care of them. As most of the older type ice cream cabinets have become obsolete and worn out in service, cabinets in use today, for the most part, are of the newer type.

TYPES OF CABINETS

Usually the cabinet is made up as a self-contained unit, enabling fast movement on or off the job. The refrigerant control is through an expansion valve, and the running cycles of the condensing unit are controlled by a thermostatic switch.

There are, however, some cabinets using high side float valve controls and most of the old cabinets used low side float valve controls. Also, occasionally low pressure switches are used to operate the condensing unit, but the thermostatic type control is by far the most popular for this type of installation.

Part II of the chapter on "Storage and Dispensing of Ice Cream" will be published in next month's issue.

OPPORTUNITY FOR MANUFACTURERS' AGENTS

Expanding program on regular, panel, ceiling and low temperature unit coolers, replacement condensers and allied refrigeration parts requires aggressive, hard hitting manufacturers' agents familiar with commercial refrigeration equipment and parts distribution. Write giving full details of experience and territory covered. E. A. Bonneville, Sales Manager Refrigeration Division, Fedders-Quigan Corporation, Buffalo 7, N. Y.

For Efficient Refrigeration

New

K-20-5

ELECTRO-MAGNETIC

VALVE

For complete specifications on Automatic Pressure, Temperature and Flow Controls, request new Catalog 52C.

GENERAL CONTROLS

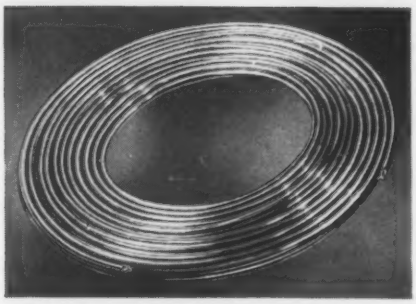
801 ALLEN AVENUE GLENDALE 1 CALIF

FACTORY BRANCHES: PHILADELPHIA • ATLANTA BOSTON • CHICAGO • KANSAS CITY • NEW YORK DALLAS • DENVER • DETROIT • CLEVELAND • HOUSTON • SAN FRANCISCO • SEATTLE • PITTSBURGH

DISTRIBUTORS IN PRINCIPAL CITIES

DRIER INSIDE

than an empty gas tank



Revere Dryseal Copper Refrigeration Tube

THERE may be one last drop in an empty gas tank, but *not* in Revere Dryseal Copper Tube. For exacting installations—where even the slightest trace of moisture or other foreign matter could obstruct flow or cause expansion valves to "stick"—you can rely on Revere Dryseal. Its distinctive sealed ends are your assurance of complete dehydration and cleanliness.

Each length of Revere Dryseal is carefully dehydrated during manufacture until its interior is bone dry, and it is then immediately sealed at both ends to keep all moisture and other foreign particles *out*. This tube is made of deoxidized copper (99.9+% pure) and is kept oxide-free by special processing methods. It is dead soft so that you can bend it and work it easily.

Made for refrigeration, air conditioning, heat control and other services, Revere Dryseal Copper Tube is being shipped to distributors as rapidly as Revere can produce it without lowering its top standard of quality. It comes in sizes from ⅛" to ¾" O. D., with .035" wall, and is standard in 50-foot coils. Revere Dryseal and the many other Revere products are handled by leading distributors throughout the country. A Revere Technical Advisor will gladly consult with you about your requirements.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, New York

Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; New Bedford, Mass.; Rome, N. Y.—Sales Offices in Principal Cities, Distributors Everywhere

Listen to *Exploring the Unknown* on the Mutual Network every Sunday evening, 9 to 9:30 p. m., EST.

Coming Soon...

A NEW TYPE OF HEAT EXCHANGER

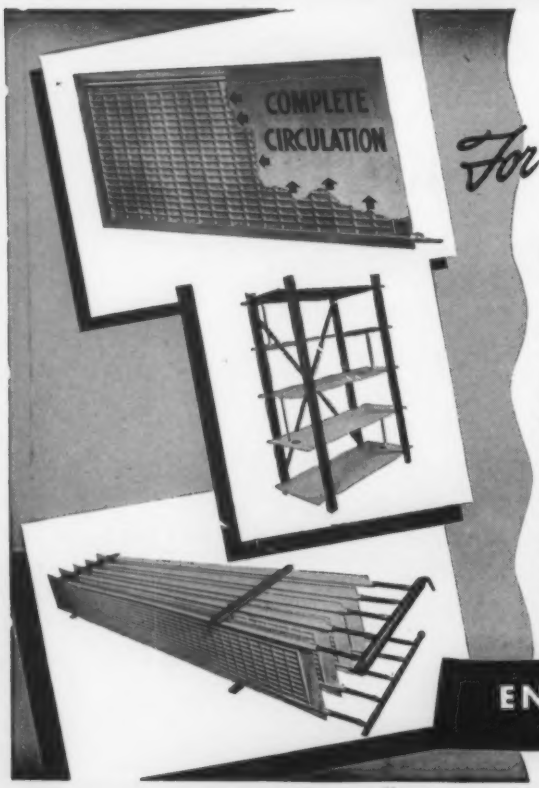
IT'S UNIQUE...IT'S REVOLUTIONARY...IT'S Superior

Watch for complete details

Superior Valve and Fittings Co.

1509 WEST LIBERTY AVE., PITTSBURGH 26, PENNA.

OFFICES IN PRINCIPAL CITIES · STOCKS: CHICAGO (6) · LOS ANGELES (15) · JOBBERS EVERYWHERE



For Complete Surface Freezing

HUBBELL-YODER REFRIGERATION PLATES

—and we mean "*COMPLETE* SURFACE."

Take a 19" x 108" Hubbell-Yoder Plate for example. That's 2052 square inches of plate area. And every single square inch is actual prime heat pickup surface. You see the interior of the plate is a network of ducts through which the refrigerant circulates, spreading out in all directions so as to form a web of refrigerating element. That's "*Complete* Surface Freezing."

If you make, sell or use low temperature equipment such as freezer cabinets, locker plant plate banks, sharp freeze shelf stacks, etc., it will certainly pay you to get details on Hubbell-Yoder Plates. They'll step up operating efficiency and reduce operating costs. As the old darkey said, "Dat am no prophecy: dat am a *fact*." Write, wire or phone.

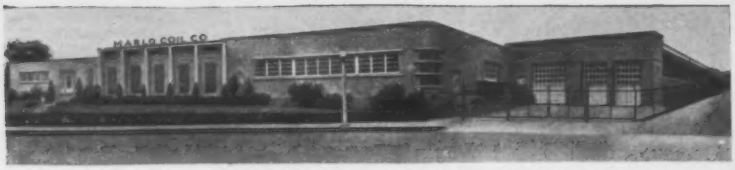
HUBBELL YODER REFRIGERATION PLATES

International Sales Agents

ENGINEERING SERVICE INC.

1311 WEST 80TH STREET CLEVELAND 2, OHIO

Marlo Completes New Plant Addition



A new addition containing 18,600 sq. ft. of floor space has recently been completed at Marlo Coil Co.'s plant in St. Louis. The new construction provides greatly increased manufacturing and assembly space. Beginning with 750 sq. ft. in 1925, the new addition brings Marlo's total factory area to 42,600 sq. ft., devoted entirely to the manufacture of heat transfer equipment.

FROZEN FOOD INSTITUTE TO MEET IN BOSTON

Talks on the storage of frozen foods, preparation of foods for freezing, and the effect of home freezers on the frozen food field will highlight the Educational Congress of the Frozen Food Institute to be held March 31 through April 4 at the Copley Plaza hotel in Boston.

The exhibit area established at Horticultural Hall already is 50% contracted, according to the institute.

CHARTER PRESENTED TO DALLAS-FT. WORTH ASRE

Charter of the Dallas-Fort Worth section of the ASRE was presented to the organization at its January meeting by Hugh Martin, chairman of the section, who also spoke briefly of his visit to the society's 42nd annual meeting in New York City. Alfred Chadburn, assistant secretary of the national organization was the principal speaker. He discussed the potential market awaiting the refrigeration industry.

NEWS BULLETIN ISSUED BY ILLINOIS RSES

Publication of a periodical news bulletin for the benefit of its members has been launched by the Illinois Association of RSES. The first issue, an eight-page mimeographed sheet, bore the name "Illinois R.S.E.S. News," but also announced a contest for a permanent name for the publication.

"USED MODELS" STORE IN NEW ORLEANS

What is claimed to be "the first complete used refrigeration retail store in New Orleans" has been opened by Seacorp Refrigeration Exchange, located at 807 St. Charles.

PREDICTS NEW HIGH IN STAINLESS STEEL USE

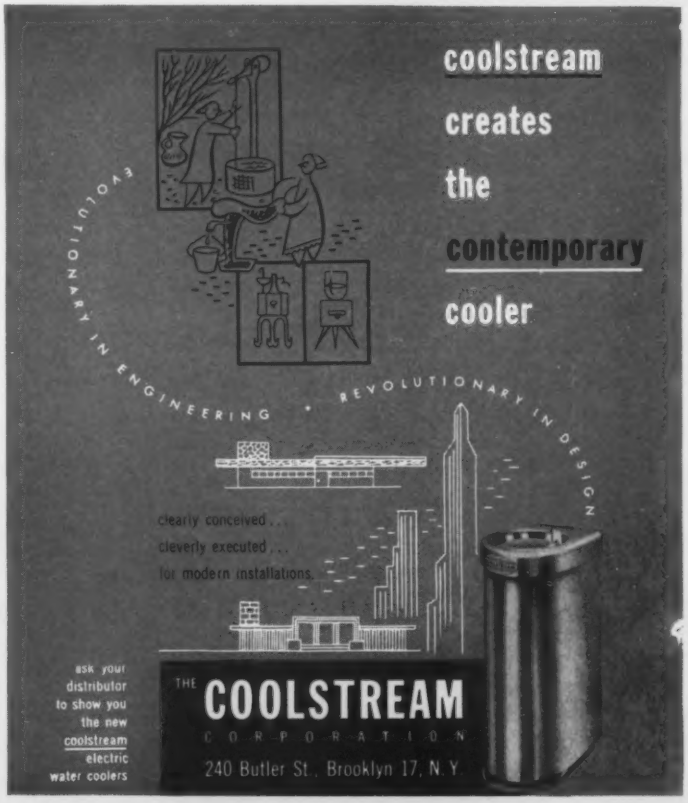
Stainless steel will set an all-time high in 1947 in both production volume and methods of application, believes Walter D. Monroe, president of Chicago Steel Service Co., pioneer in stainless steel sale and distribution. Mr. Monroe expects production this year to be between 600,000 and 700,000 ingot tons. Kitchen accessories, food processing equipment and mechanical refrigerators, in that order of importance, are among the principal users of stainless steel.

Vast Home Locker Field Open to Tyler Agents

Of great importance in the new Tyler program is the fact that Tyler agents now have two complete lines —the complete, out-in-front, always-improving Tyler welded steel commercial line, and the growing Tyler Harder-Freez Home Locker line.

Aggressive national advertising is publicizing the Tyler name and Tyler products. Sub-Agencies are available. Write Tyler Fixture Corporation, Dept. RI-3, Niles, Michigan.

IT'S TYLER
FOR FOOD REFRIGERATION



SHANK VALVES

The Finest
SHANK
SEMI-STEEL
SHUT-OFF VALVES

Made of highest grade non-porous metal—full size ports insure maximum flow. Clean cut threads. Double seated stem of rust proofed carbon steel. Special design base with swivel seat for perfect alignment. Long packing ring.

When you use Shank Refrigeration products you use the finest

•

ALL-STEEL LINE VALVES
ALL-STEEL GAUGE SETS
WATER REGULATORS
STRAINERS—DRIERS

Write for bulletin and prices

CYRUS SHANK COMPANY
631 W. Jackson Blvd., Chicago 6, Ill.

MID-WEST JOBBERS ELECT OFFICERS

New officers of the Mid-West Refrigeration Equipment Wholesalers Association were elected at the group's recent meeting in Kansas City. They are: E. L. Tramposh, chairman; Frank Pond, vice-chairman, L. W. Kreuger, secretary; Joe Bickel, treasurer.

A luncheon with manufacturers and a sound film on copper and brass shown by R. B. Chapman of Revere Copper & Brass, Inc., were features of the program.

SYRACUSE JOBBER SHIFTS TO LARGER QUARTERS

Central Service Supply Co., Syracuse, N. Y., and Scranton, Pa., refrigeration parts wholesaling firm, will move its Syracuse headquarters to new and larger quarters at 645-647 So. Warren St. on or about April 1, reports Theodore I. Glou, president.

The new building, which faces on Warren St. and runs through to Harrison Place, has 13,000 sq. ft. of floor space. It is located in the very center of town, with ample parking facilities.

LANGSENKAMP EQUIPS SIX LOCKER PLANTS

John A. Kollins, refrigerating engineer for F. H. Langsenkamp Co., Indianapolis refrigeration wholesaler, reports that during recent months the company has furnished refrigeration equipment and engineering layouts for six new locker storage plants in the Indiana and eastern Illinois area.

The individual locker plants include: Johnson Brothers, Boggstown, Ind., 500 lockers; Webb's Locker Plant and Abbatoir, Greenfield, Ind. (addition), 500 lockers; Dickens Brothers, Van Buren, Ind., 480 lockers; Dale's Abbatoir and Freezing plant, Jamestown, Ind.; Drake's Refrigeration Co., Marshall, Ill., 760 lockers; Massey Food Locker Plant, Shirley, Ind., 420 lockers.

CINCINNATI WHOLESALER SPLITS OPERATIONS

Sweeping changes have been announced in the organizational structure of Merkel Bros. Co., longtime Cincinnati wholesaler of refrigeration parts and supplies as well as plumbing and heating equipment.

Merkel Bros. Co. has been dissolved and its principals have retired. The business has been divided into two separate and distinct organizations. The refrigeration activities of the firm will be operated at 901 Broadway by Lewis F. Merkel, son of the retiring president, under the name of Merkel Bros. Refrigeration Parts. Four of the original Merkel firm's employees will continue with the new firm.

—*"Electrical Dealer"*

FLEXONICS* at work

DAMPENING VIBRATION and NOISE in piping systems

PROBLEM: Operating personnel in a large power plant was experiencing equipment damage due to vibration and failures of pipe lines carrying compressed air to various plant stations. The problem was to locate the source of trouble and correct it.

SOLUTION: Chicago Metal Hose engineers were consulted and through their knowledge of the science of FLEXONICS,* recommended the installation of *Rex Vibra-Sorbers* at determinable locations in the piping system.

RESULT: Line failures ceased when transmitted vibration was absorbed by *Rex Vibra-Sorbers* (available in various alloys). Disturbing noise also was eliminated. When you have a vibration problem, ask for a C.M.H. engineer and he'll help you reach a satisfactory solution!

*the science of FLEXONICS
"The controlled bonding of thin metals for use under varying conditions of temperature, pressure, vibration and corrosion" . . . is exemplified in the basic products of Chicago Metal Hose Corporation.

LEADER IN THE SCIENCE OF FLEXONICS

CMH CHICAGO METAL HOSE CORPORATION
Maywood, Illinois • Plants: Maywood and Elgin, Illinois

TESTED BY USE TESTED BY USE TESTED BY USE

"Let's share our knowledge—exchange our experience"

Here's how

THE SERVICE MAN'S DEPARTMENT

Edited by Warren W. Farr

Tempest in a Sight-Glass

The item in our January issue on the proper location of a sight-glass in the liquid line (it was an item submitted by J. C. Robinson, of McKeesport, Pa.) seems to have started quite a controversy. Here are excerpts from two of the several letters received since the issue came out:

First, here's what John A. Kelley, Jackson, Mich., has to say:

"With a dehydrator between receiver and sight-glass and a restriction in dehydrator, sight-glass will indicate a shortage of refrigerant. This will be true in liquid line only.

"The average service man is in a hurry and with a look and quick diagnosis is apt to add refrigerant to a system that already has enough. *Another* sight-glass above dehydrator would help diagnose the trouble, but would also add three more places for a possible leak.

"A frosted or sweating liquid line is always a sign of a restriction or expansion taking place in line."

Next, let's hear from Paul B. Bruffey, of Bruffey's Refrigeration Service, Richmond, Va.:

"It seems that I've been instructing my men the wrong way to install a sight-glass, judging by the item in your January issue. The item states that the correct way to install one is for it to be between the dryer and evaporator. My opinion has been that a sight-glass should be installed *before* the dryer, thereby eliminating any possibility of overcharging due to a stopped-up dryer.

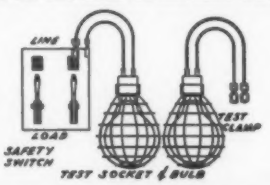
"We had a case of a methyl chloride unit where a small dryer was blown open due to this procedure. Please give us your idea and if I'm wrong don't mind saying so; but I do believe from a standpoint of safety and the actual reason for a sight-glass that nothing should be in the line between the receiver and sight-glass."

Now for our side of the story:

There always has been—and probably always will be—considerable difference of opinion as to the best place to locate a sight-glass. The method illustrated in our January column was chosen because it provides the only means of determining if the expansion valve is getting adequate flow of re-

HERE is a method which I have used to get some "light on the subject" while doing service work on condensing units where close inspection of various parts is necessary.

I use a test socket set with test clips on the ends of the lead wires.



By attaching to hot side and ground (using 220 v.) or to the line side (using 110 v.) of the safety switch, which in many cases is located near the refrigerating machine, I can make sure of having plenty of light to work by.

There are many times when the service man is forced to use his flashlight because he cannot locate a source of light convenient to the job; and a flashlight seldom casts enough light to work by for any length of time. Using the line side of the switch, you can turn the machine on and off without affecting the light.

John A. Locilento, Philadelphia.

HELP WANTED

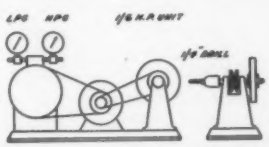
. . . By your fellow refrigeration service engineers. They can use your installation and applications ideas on refrigeration and air conditioning, your short cuts, shop practices, etc.

And there's money in it for you. REFRIGERATION INDUSTRY pays $5 for each idea published. Send yours to

Here's How Editor
The Refrigeration Industry
1240 Ontario St.
Cleveland 13, Ohio

HERE is a very handy portable unit, which can be assembled cheaply from a discarded ⅛ hp SO_2 or equivalent compressor, a motor, and a grinder head. Grinder should be belted to the speed of the motor (1750 rpm).

In my own unit, I use a ⅛ hp old model Copeland unit with a grinder



head and a ¼-in. chuck which I picked up at a chain store. Here are some of the uses you can find for a device of this sort:

To pump pressures up to 135 lbs.

To pump vacuums to 28 in.

To pump gases from one vessel to another.

To evacuate multiple-connected installations.

To evacuate oil from medium and large compressors.

To do light drilling jobs.

To buff all sizes of copper tubing and sweat fittings (by winding steel wool on twist drill to make buffer of any desired size).

To grind ends of hard drawn copper pipe.

I find this unit very useful in the installation of medium and large plants using hard drawn copper pipe and sweat fittings, as it is easy to carry from one job to another. It is also handy in a small shop and for grinding small tools.

H. H. Roberts, Richmond, Va.

new ATTIC FAN TIMER by Paragon

HERE'S a new member of the Paragon family . . . the AF Series for timing attic and window fans.

Entirely new in design, this timer is offered in two time ranges, 0-10 hours and 0-20 hours, each fully adjustable to any position on the dial . . . a real convenience for the user.

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Get your orders to your jobber—now and start planning installations early. Complete data sheet on request.

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frigerant. It also indicates, besides refrigerant flow through the expansion valve, the presence of any restriction to the dehydrator or strainer assembly.

The letters quoted above point out the fact that a sight-glass so located might indicate a shortage of refrigerant when the real trouble was a restricted dryer, and that a safety hazard might be created as a result of adding refrigerant unnecessarily.

This point is an excellent one, but in our opinion the high pressure cut-out and relief valves would provide adequate safety against the high pressures caused by excessive refrigerant. So we support Mr. Robinson in his original statement. If any other readers have comments they'd like to get on the record, though, we'll be glad to have them.

Leak "Detective"

The other day one of our friends in the refrigeration service business told us about a method he uses to locate those slow-to-appear, hard-to-locate leaks on condensing units and similar pressure vessels which use a liquid in combination with oil. He says he's used it a number of times and it works fine. We haven't had a chance to try it ourselves, but if it does what he claims it does, he's got something. Here's his advice:

First clean the outer surface, to remove oil and dirt. Then paint the entire unit with black *dull finish* paint. Let it dry; if there's a leak it will show up plainly, on later inspection, as a glossy spot on the otherwise dull surface of the unit. If the leak is a very slow (or small) one, it may take weeks (or months) for it to become apparent—but whenever it does show up, you can spot it.

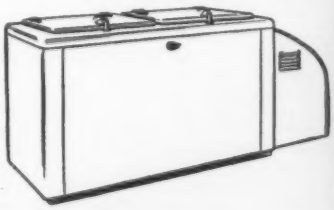
One of the good things about this method, our friend says, is that you can use it on the job as well as in the shop. So if you've been bothered by one of those annoying leaks that simply defy detection, get out a bucket and brush and start swabbin', brother.

Oil the Motor Regularly. This is one of the principal laws of care for every motor.

Clean Air-Cooled Condensers. Dust and dirt can clog up the air-cooling unit of a condenser, making a motor labor harder than ever. Shut off the power first, then clean out with a brush, pump or vacuum cleaner attachment.

The sealed-type compressor unit does not require as much care as the belt-driven type. Nevertheless, the same principles of maintenance should be employed. Keep the compressor clean regularly with brush, rag or vacuum apparatus, oil when necessary and allow for adequate circulation around the condenser. ("Refrigerator Care Pays Premiums," *Super Market Merchandising.*)

FREEZER CABINETS



Available for prompt shipment, the new SANITARY FREEZER CABINETS will complement your finest condensing equipment. Heavily built, with steel welded frame, complete with freezer plates, cold controls, and expansion valve. Built for high efficiency at low operating cost. Requires only addition of condensing unit.

PLACE YOUR ORDER for these "top quality" SANITARY Freezer Cabinets TODAY.

SANITARY REFRIGERATOR CO.
Manufacturer
FOND DU LAC, WISCONSIN
Ice Refrigerators For More Than 40 Years
Quickfrez Farm Locker Plants Since 1939

Continued from page 67

la Consolidated Copper Co., and its application was displayed in a Lintern Aire-Rectifier. Samples of other types of tubing also were shown.

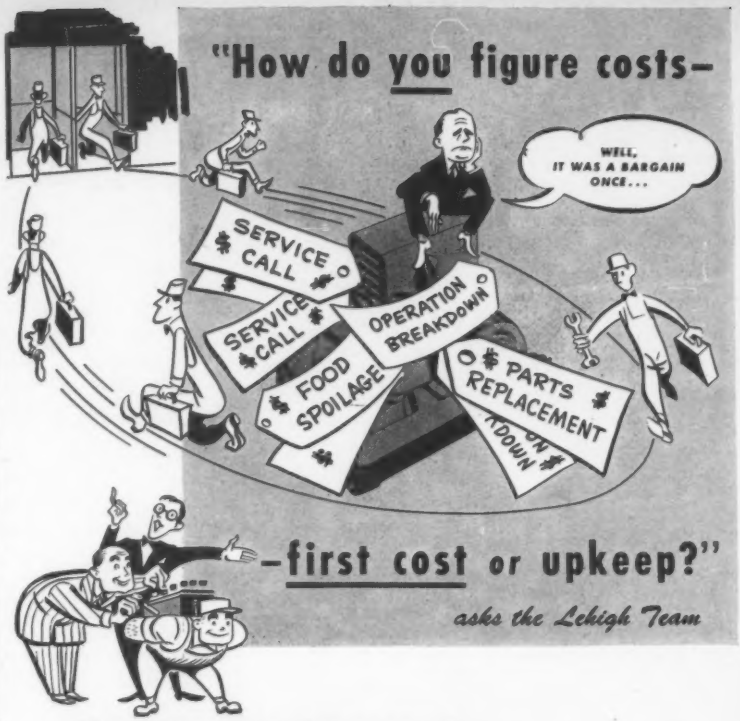
Worthington Pump and Machinery Corp. exhibited in its display a centrifugal compressor, a model SCY self-contained air conditioner, a Freon-12 condensing unit, an ammonia unit and a model of its ECZ series of evaporative condensers.

York Corp. devoted its entire display to an exhibition of its centrifugal compressor. Key features of the line were spotlighted in individual placards; district offices' location and personnel were featured in the back panel display.

Young Radiator Co. exhibited vertical and horizontal models of its "Streamaire" line of air conditioning units, which are adaptable for year-around air conditioning. Also shown were models of the company's heating and cooling coils, and horizontal and vertical discharge unit heaters.

RING OUT THE OLD, RING IN THE NEW

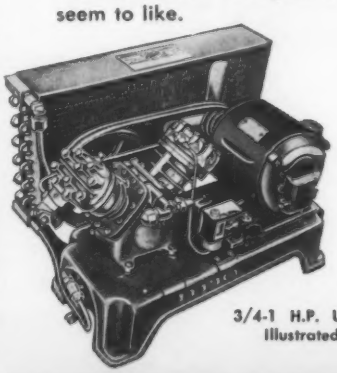
Jack Glass (left) of Chase Refrigeration Co., retiring president of the Central Refrigeration Wholesalers Association, congratulates his successor, Lee Keeley of Airo Supply Co. Other newly elected officers of the group are: R. M. Potter, U.S. Electric Co., vice chairman; Irving Alter, Harry Alter Co., treasurer (re-elected); and Pat Ravanesi, Service Parts Co., secretary.



The Correct Answer Is . . . IT ALL DEPENDS!

★ We are not talking about BTU output—or wattage input. Those are slide-rule figures which we will discuss another time. Our question is pointed at the **smallest** item in the "cost" of a good Condensing Unit. Its cost in **dollars.** BLU-COLD'S amazing 1946 record, with the ***smallest percentage of field failures in the industry,** emphasizes and pounds home one indisputable fact — it **pays** to buy Quality, and it **pays** to pay the price. No sir! You can't buy the Quality that Lehigh builds into BLU-COLD at bargain-basement prices. And that's a policy that America's sharpest, smartest condensing unit users seem to like.

*Figures on request



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NOW IN PRODUCTION
1/4 to 1 H.P.
Full Line to Include up to 5 H.P.
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If interested, indicate lines now represented. Address Box 1147, Refrigeration Industry.

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Serviceman, with supervisory experience, complete training, and service data on "Frigidaire" equipment, Air conditioning and General commercial equipment. Desires to relocate. Box 3147, Refrigeration Industry.

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Immediate Delivery Freezers, open and closed glass top, stainless steel top, canopy type, 29-44 cu ft. Florist, Dairy boxes, bottle coolers, double duty display cases. Ice Cream cabinets, storage boxes, wood-metal. 4-6 can milk coolers, reach-in refrigerators. Water fountains. Frigitemp Corp., 931 Bergen St., Brooklyn 16, N. Y. Main 2-9093.

FOR SALE—Air-cooled & Water-cooled, remanufactured condensing units, ¼ up to 2 H.P. Write for particulars, Edison Cooling Corp., 310 East 149 St., Bronx 51, N. Y.

IMMEDIATE DELIVERY—New Air Conditioning Equipment. Weathermakers complete with motor, "Freon" coil, etc. 2 ton to 25 ton, SWSI, DWDI, and Twin Centrifugal Blowers, Propellor Fans, Heating and Cooling Coils, Evaporated Condensers, Self-Contained Air Conditioning Units. Condensing Units. CONTROLDTEMP CORP. 236 Butler St., Brooklyn 17, N. Y.

FOR SALE: 12 - 16 - 19 - 22 and 26 cubic foot freezer cabinets. Write for list and prices. Rathbun Refrigeration Company, 325 Scribner Ave., N.W., Grand Rapids, Michigan.

NEW COPPER-NICKEL TUBES
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At 25c per lb.
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We buy, sell, trade household and commercial refrigeration compressors, coils, tubing, motors, A.C.-D.C., Farm lighting plants. Give complete details. Write Myers Electric, Manitowoc, Wis.

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ICE-X quickly cures emergency freeze ups when ice forms at the expansion valve or capillary tube. Harmless to use. Great for Freon, Carrene, or Methyl Chloride systems . . . The dependable liquid anti-freeze.

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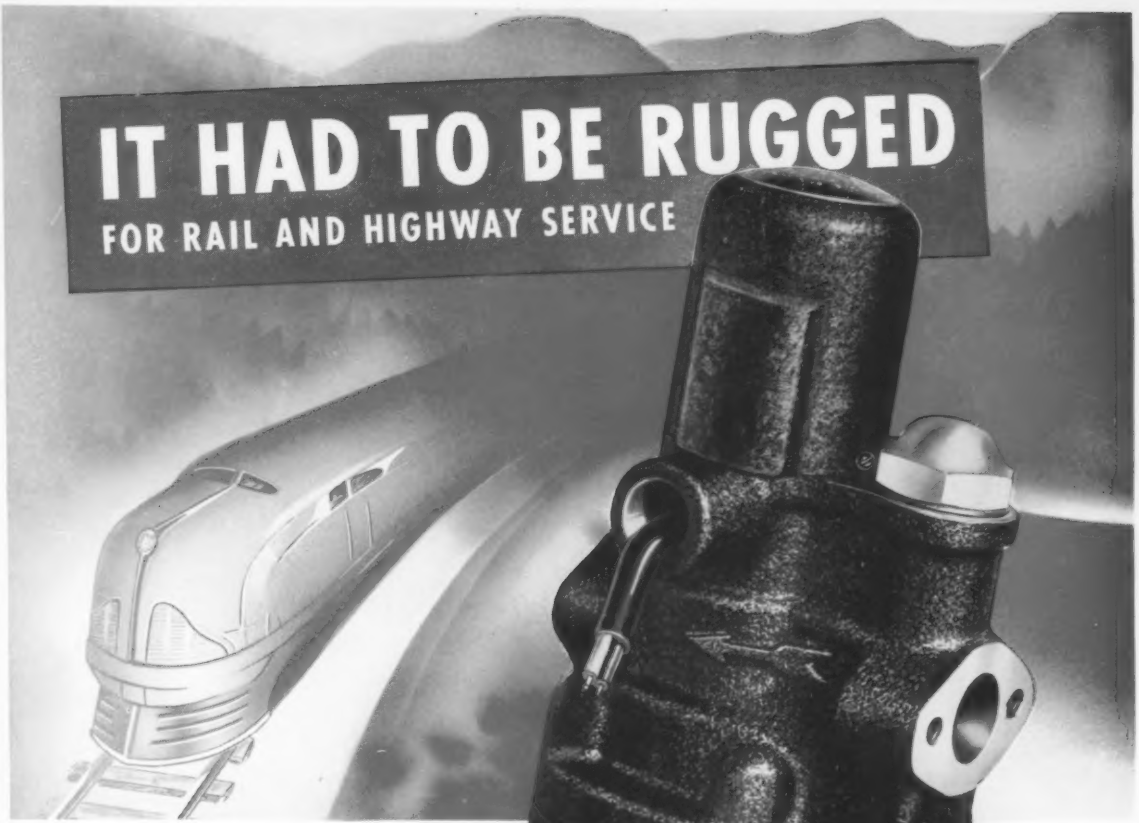


your service work is easier

***... because A-P refrigeration valves are* DEPENDABLE**

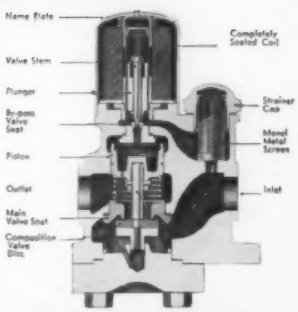
The first air conditioned streamliners to race over the rails used the A-P Model 70-NA Solenoid to control refrigerant in their air conditioning systems. Further test of its rugged strength, leakproof safety and trouble-free service came from busses, trucks, ships, and other mobile units as well as all types of large air conditioning and refrigeration installations everywhere.

An "11 pound handful", the Model 70-NA measures only 7¼" high by 3½" wide. In spite of its large capacity, up to 20 tons Freon, it requires surprisingly little power to operate. Current is needed only to open a small by-pass, allowing refrigerant to pass into the chamber above the main piston. Pressure then forces the piston down, opening the main valve without additional electrical power. This feature, plus the use of the A-P "impact type" plunger in the by-pass, means easy and efficient opening under high pressure.

Few, if any, solenoids can give you the wide range of application provided by the A-P Model 70-NA. For instance, it offers three flange sizes — ⅜", ¾" and ⅞" — A.C. voltages of 20, 24, 115, or 230, and 25, 50 or 60 cycles. Also 6, 12, 32, 64, 115, 230 volts D.C.

Put the rugged DEPENDABILITY of the A-P Model 70-NA to work for *your* benefit on large installations of every kind. Your jobber carries it in stock—or write for Bulletin 402-A.

A-P Model 70-NA Solenoid Refrigerant Valve
With wide range of flange sizes, voltages and cycles—for applications up to 20 tons Freon.



Cross Section of Model 70-NA Solenoid showing by-pass principle, and other construction features.

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2486 NORTH THIRTY-SECOND STREET • MILWAUKEE 10, WISCONSIN
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STOCKED AND SOLD BY GOOD REFRIGERATION JOBBERS EVERYWHERE . . . RECOMMENDED AND INSTALLED BY LEADING REFRIGERATION SERVICE ENGINEERS

MONEY ISN'T EVERYTHING-

(OR IS IT?)

BY GROUCHO MARX

WHAT do you want to save up a lot of money for? You'll never need the stuff.

Why, just think of all the wonderful, wonderful things you can do *without* money. Things like—well, things like—

On second thought, you'd better keep on saving, chum. Otherwise you're licked.

For instance, how are you ever going to build that Little Dream House, without a trunk full of moolah? You think the carpenters are going to work free? Or the plumbers? Or the architects? Not those lads. They've been around. They're no dopes.

And how are you going to send that kid of yours to college, without the folding stuff? Maybe you

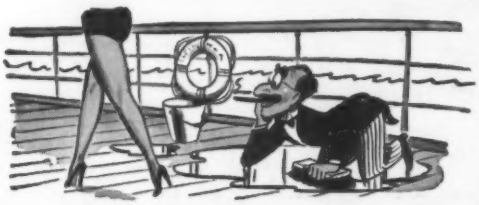
think he can work his way through by playing the flute. If so, you're crazy. (Only three students have ever worked their way through college by playing the flute. And they had to stop eating for four years.)

And how are you going to do that world-traveling you've always wanted to do? Maybe you think you can stoke your way across, or scrub decks. Well, that's no good. I've tried it. It interferes with shipboard romances.

So—all seriousness aside—you'd better keep on saving, pal.

Obviously the best way is by continuing to buy U. S. Savings Bonds—through the Payroll Plan.

They're safe and sound. Old Uncle Sam *personally*



guarantees your investment. And he never fobbed off a bum I.O.U. on *anybody*.

You get four bucks back for every three you put in. And that ain't hay, alfalfa, or any other field-grown product.

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SAVE THE EASY WAY... BUY YOUR BONDS THROUGH PAYROLL SAVINGS

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